

# Railroad Age Gazette

Including the Railroad Gazette and The Railway Age

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"Some Reasons Why Railways Are Unpopular" are given in another column by Mr. Dunn. He enumerates nine instances of either inefficiency or impoliteness. He notes three cases where officers traveling have observed and promptly corrected bad practice. He suggests schools for the instruction of employees in dealing with the public, somewhat in the line of other schools; meetings, examinations and tests for securing discipline and exact knowledge of working rules. He has chosen for illustration incidents of the most frequent and commonplace character—complaints with which every railway officer is familiar. Nevertheless, the officer who dismisses from his mind complaints of this nature because they are "old matters" makes a serious mistake. Politeness costs nothing; it costs a little, but not much, to teach politeness. The attitude of the employee to the public is apt to reflect the attitude of the heads of the corporation toward the public. Most customers of the railways assume that surliness and unpleasant rigidity by the employees they meet indicate the attitude of the corporation to the public; and in this present era, when there is a beginning of a change in the attitude of the public to the railways, the subject is one deserving careful consideration. The employee, in dealing with the public, is a salesman; he is not called upon to humiliate himself or to smirk; but he should distinctly understand that he is in the business of selling goods, goods of a very high character, goods which are rightly regarded as a public necessity. His

corporation sorely needs the good will of every one of its customers. He is making or marring that good will in every relation he has with the customers. There is a happy medium of dignity, decency, thoughtfulness, accuracy and kindness—especially kindness—to be aimed at, and, quite unlike a tenor voice, these things can be had for \$40 a month. The best means of securing these results are worthy of study, and we shall be glad to have the experience of those who study the subject.

Collision No. 12, in the government accident record, reprinted on another page, occurred under the A B C system of block signaling as used on the Northern Pacific and as described in the *Railroad Age Gazette* last February. As that system is not in use on any other road, this collision must have occurred on the Northern Pacific, though we cannot identify it with any item in our monthly records. The principal point to note is that one of the causes of the collision was the practical suspension of the block system—which is what it amounts to when trains are ordered to meet at a non-telegraph station. The merits of the A B C system are obvious, but complete or partial abandonment of the system must, of course, involve the complete or partial sacrifice of meritorious features. We understand that the Northern Pacific has lately adopted a rule requiring both trains to stop before passing the first switch at a meeting point. That is a good safeguard against disastrous results from an error like that which made the trouble in this case; but why is not a rule to run under control sufficient? Every runner, every day, at many places, is trusted to avoid disaster by regulating the speed of his train; and yet superintendents everywhere continue, in some situations, this rule of A. D. 1850, which implies that enginemen cannot be trusted to obey rules except where the rule is so simple and unmistakable that it could be satisfactorily understood and carried out by a clam. We have spoken of one of the causes. The chief cause, however, was carelessness; carelessness on the part of three persons. As we said in our description, the A B C system has important elements of value, even when used by "average" dispatchers, station men and trainmen. The testimony of the superintendents and dispatchers of the Erie concerning the results with the Mozier system on that road—which, like Mr. Beamer's, is a tripartite system—assures us of this. Moreover, there is a saving in the time of engines, cars and men, and an increased capacity of road as compared with "train-order operation," which, measured in money, would wholly or partly offset the losses, even if the A B C were to increase the collisions instead of decreasing them. But in the handling of fast and heavy trains on a single track line, no road can rightfully be content with average men. This government record says that these operators and dispatchers had each had several years' experience; but that statement does not afford much information: what quality of experience? And of service? Were they trained men, or did they train themselves, as so many railway telegraphers have done? This incident affords a good illustration of the need of having the government bulletins made definite and valuable, as the British government bulletins are made definite and valuable, by having the records of serious collisions supplemented by reports of thorough and impartial investigations.

### COST OF SERVICE IN RATE MAKING.

We print elsewhere a letter from J. H. Johnston, traffic manager of the Oklahoma Shippers' Association, in which, replying to an editorial in our issue of October 22, page 738, he denies that he favors basing rates on the cost of the service. The views he expresses are of interest because they are shared by the traffic representatives of numerous other shippers' organizations. He says:

"What we have always claimed, and now reiterate, is that comparatively, as between two manufacturers, two jobbers, or two retailers, for

that matter, handling the same kind of freight, if a railway has discriminated in favor of one by performing the same or similar service for less money than for the other, it should be obligated similarly to legislate in favor of the other and equalize its basis of charges, or be convicted of undue and unjust discrimination."

In a letter printed in our issue of October 8, page 628, Mr. Johnston gave a concrete illustration of what he means. He figured that the average rate per ton per mile on green coffee in carloads from New York to San Francisco is 4.7 mills. He assumed that "we may consider that this figure represents cost of service, including both interest on fixed charges and operating expenses," and said that "thus we are afforded a basis upon which to figure the profit which carriers are making on similar hauls to interior points." The rate per ton per mile from New York to Denver is twice as much, being 9.4 mills. Therefore, said Mr. Johnston, the carriers derive from the haul to Denver "a profit of a little more than 100 per cent. over and above the cost of service." In view of his reasoning about the rate on green coffee, his statement that "if a railway has discriminated in favor of one (manufacturer, jobber or retailer) by performing the same or similar service for less money than the other, it should be obligated to legislate in favor of the other and *equalize its basis of charges*," must mean that the rates of shippers in different communities should be based on the cost of service per ton per mile, or we are unable to understand the English language. Now, apply this reasoning to the rates on different commodities. The railways often get as little as 3 mills per ton per mile for hauling coal. According to Mr. Johnston's logic "we may consider that this figure represents cost of service, including both interest on fixed charges and operating expenses, and thus we are afforded a basis upon which to figure the profit which the carriers are making" on similar hauls of other commodities. But the carriers often get four or five times higher rates per ton per mile for hauling more valuable commodities than they get for hauling coal. It must follow that they are getting a profit of 400 or 500 per cent. above what is reasonable for hauling these more valuable commodities. Therefore, according to Mr. Johnston's theory, all their other rates ought to be reduced to the basis of their rates on coal.

But Mr. Johnston stoutly repudiates this conclusion. In the letter printed elsewhere he says:

"We think it absurd to claim that a common carrier should have to transport a given weight of hardware or dry goods for the same charge for which it would have to move the same weight of sand, and we are not willing to have you try to force us into such a position, which we have never assumed."

We are not trying to force him into that position. He puts himself there. If he does not know it, it is because, like many other shippers who demand reductions in rates, he does not see the ultimate conclusions to which his reasoning leads. The initial error in Mr. Johnston's reasoning is disclosed by his statement in his letter which we published in our issue of October 8, that "practically all railway officers admit on the stand that they have no right to and do not intend to make rates less than the cost of service." No railway officer who knows his business ever said on the witness stand or anywhere else that he did not make any rates less than the cost of service, if in this be included all operating expenses and fixed charges. What the railway man does say is that he tries to take no traffic the revenue from which will not exceed the expense which the transportation of that particular traffic adds to the operating expenses which would be incurred if that traffic were not hauled. This is his minimum. His maximum is what the traffic will bear without curtailing its movement or growth—in other words, what will not exceed the value of the service to the shipper. So long as this method of rate-making prevails the railway will get a higher profit for hauling a given commodity one distance than it gets for hauling it another distance, and a higher profit for hauling one commodity a given distance than it gets for hauling other commodities the same distance; and if the fact that it earns different profits from hauling the same commodity different

distances, and that fact alone necessarily convicts it of "undue and unjust discrimination," as Mr. Johnston says it does, then why does not the fact that it earns different profits from transporting different commodities not necessarily convict it of "undue and unjust discrimination?" It is quite true, as Mr. Johnston says, that it is "absurd to claim that a common carrier should have to transport a given weight of hardware or dry goods for the same charge for which it would move that weight of sand," but those who argue for the absurd cost-of-service principle cannot consistently repudiate the absurd deductions to which it inevitably leads.

#### THE RAILWAY READJUSTMENT IN NEW ENGLAND.

President Mellen, of the New York, New Haven & Hartford, with two other directors of that company, J. Pierpont Morgan and William Skinner, are now in the directorate of the Boston & Maine, and Messrs. Mellen and Morgan are in the Boston & Maine executive committee. This action of the Boston & Maine stockholders, on Tuesday of this week, may undoubtedly be considered the final step in the virtual consolidation of these two important and extensive railway systems. Mr. Tuttle is re-elected president of the Boston & Maine. This, no doubt, is wise diplomacy. The president of a great railway is not concerned alone with budgets and the bond market; he has important relations to the public which his road serves; and even if Mr. Mellen is to be the chief operator and Mr. Morgan the chief financier, they cannot be "on the job" constantly. The Boston & Maine is still east and north of Boston, and the people of that territory still cherish their right to shake hands occasionally with the president of the road.

Actual ownership of a majority of the Boston & Maine shares has not yet passed to the intermediary corporation, the Boston Holding Company. But there are enough to carry practical control, and a majority will be easily enough acquired. Full responsibility for the railway monopoly of New England now rests on the New Haven corporation and its head, except in that remote northern extremity reached by the Bangor & Aroostook. The great system now consolidated is, indeed, cut east and west by the Boston & Albany and north and south by the New London Northern, leased by the Grand Trunk; but these represent essentially single lines, mere outlets and inlets, not a network that covers almost everywhere, as in the case of the two merged systems which hitherto have divided New England into north and south. The readjustments likely, indeed almost sure, to follow sooner or later, form an interesting horoscope of New England's railway future.

In the New Haven's past development, so far as concerns New England, Boston has been the focal point. That city has been the eastern terminal of the system, the point to which has been referred its longest haul both in passengers and freight. Twenty years ago the New Haven divided business about equally between the New London and the Springfield routes. Then came the acquisition of the Stonington and the Old Colony lines, the double tracking of the Shore Line and the creation of a through main stem to Boston that naturally took much the greater volume of business. It made Boston also a transfer point for considerable northern New England traffic. This situation, long continued, is now at last modified. Outside of Boston the New Haven will begin to exchange business with a system of its own. Facilities via Springfield, Worcester, Fitchburg and other points are well-nigh sure to be enlarged, business, especially passenger business, speeded up and new trains put on with, for examples, the stimulation of the White Mountain traffic in summer and Canadian business all the year round as prominent objectives. This last, especially, is a part of the New Haven's policy that will be worth watching, particularly in the line of exchanged traffic with the Canadian Pacific, the close



physical relations of which with northern New England a glance at a railway map will emphasize.

That Boston, in the new railway dispensation, will lose somewhat of her transfer railway business is probable. This, however, will have more of a sentimental than a seriously financial effect; and as the metropolis of New England, Boston will share indirectly in the readjustments that profit the whole region. But she will also gain certain local offsets. A subway of magnitude connecting her North and South stations is already heralded, and is doubtless the forerunner of other subways. Looking farther into the future, Boston is a city already large enough to be an early sharer in that coming epoch when subway distribution and concentration are to supersede the great railway terminals. In that coming phase of terminal development the centralization of railway control is sure to be an important coefficient; the public is sure of better results than if railway interests were distributed and antagonistic. In the look ahead also one sees gains for Boston on the marine side. Let alone possibilities of the import trade, the expansion of the coastwise New England business of the New Haven is understood to be one of the earliest plans of the new monopoly. Boston will almost necessarily be its port of convergence for a volume of traffic, both ingoing and outgoing.

The description has heretofore fitted the status of the New Haven, which has characterized it as in southern New England a huge railway terminal. That terminal noun still measurably applies to it with the Boston & Maine annexed, but not so radically, for the annexed system reaches much more extensive New England territory, though, in traffic aspects, not so intensive. But far more important than any such terminal relation to big trunk lines is the railway change that now transmutes New England as maker and taker of traffic into a vast bargain counter where the dealer can fix his price on his goods. Including Canada and the New York harbor transfers—presently to become in part subterranean—seven trunk lines westward will tap directly the New England monopoly which can "swap" business in routes of greatest vantage and—subject to complications in which the Interstate Commerce Commission may take a hand—influence, if not dictate, rates and their division. We venture the prophecy that one or more developments of the kind will be one of the earliest results of a merger whose virtual head is not temperamentally a man of delays.

To such external problems will be added others of an internal character quite as important, and more complex and trying. To the Boston & Maine must apparently now be applied, though on a somewhat smaller and less expensive scale, that same process of rehabilitation which, on its own lines, the New Haven has almost completed. Stronger bridges, larger cars and engines, station and siding improvements, and the conditions of increased train load now take their turn in the Boston & Maine prospectus. And, joined with them, are questions of public sentiment and of legislation which President Mellen is now destined, without doubt, to gradually take up. President Tuttle has had many rough spots in his path and will have more than one problem which he will be glad to transfer to other hands. The outcry for improvements, by no means faint when the smaller local monopoly held the railway field, will hardly be stilled when a monopoly, bigger and richer, enters into possession. New Hampshire, especially, as a railway storm center of the past, opens up a deep vista of civic complexities. From whatever viewpoint, therefore, the official combination of the two large New England railway systems is seen—local, trunk line relations, physical and civic, Mr. Mellen's assumption of the practical headship, and what is tantamount to his declaration that he assumes all responsibilities, is a fact of magnitude from which, as we have heretofore outlined, may date some highly interesting chapters in New England's railway annals.

#### DROP FORGINGS.

Hand forging as ordinarily performed in locomotive and car shops is an expensive operation, and there is a constant effort to reduce the cost by the use of dies, formers and special forging machines. One of the most economical methods of producing forgings which are required in large numbers is by forming them in dies under a drop hammer. An inspection of the usual equipment of railway smith shops would indicate that the majority of the die work is done under ordinary steam hammers or in the hydraulic press or bulldozer. The drop hammer has been used to some extent for bending freight car arch bars and for forming car and locomotive forgings where the operation consists principally in bending them and there is no forming from the normal surface by pressure into dies. It is this difference which usually determines the most suitable forging machine for certain kinds of work, and in general it may be said that where the operation is simply that of bending the hydraulic press or bulldozer can best be employed, but where the forging is produced by forcing the metal into dies it can best be accomplished by the drop hammer.

Some of the advantages of forging by the drop hammer are: First, it tends to remove the scale, while the slow process of the press forces the scale into the metal, and when this occurs the dies themselves wear out faster, due to friction and high pressure under the longer contact; and, second, the finish is better because the air escapes as the hammer rebounds, while in the press it is unable to get out and forms blow holes on the surface of the forging. One of the principal advantages of drop forging is the rapidity with which the work can be done, thus increasing the number of pieces per hour. The ratio of hand work to forging in dies under a drop hammer is often as high as 1 to 12. The incidental advantage of the smooth and exact finish of die forging is that it makes it unnecessary to machine them for exact sizing. There is also little waste and less loss in the form of scrap than by hand forgings. Drop forgings are not only cheaper and more accurate than hand forgings, but they are stronger, sometimes to the extent of 50 per cent. This is due to the solidity produced by the heavy impact of the drop. The ordinary form of steam hammer is too rigid for die work and modifications have been made in it to better adapt it to this purpose.

The early form of drop hammers consisted of an anvil and tup block working in guides with a rope running over a pulley. The block was raised by men pulling on the rope and then letting go. Hand lift stamps of this kind are still used at the East India Railway locomotive shops. Nasmyth, who invented the steam hammer, also built drop hammers in which the tup block was raised by a rope attached to the piston of a vertical steam cylinder. The drop hammer now used most extensively in England was designed by Brett of Coventry in 1897. In this hammer the tup is raised by ropes which are wound up on a drum by a simple rotary steam engine. A number of these drop hammers are in use at the Crewe works of the London & North Western, and the hammer shop of these works has recently been rearranged so as to permit the use of larger numbers of drop hammers. The drop hammer used in the United States in largest numbers for small and medium sized work is the board drop, in which a vertical board to which the tup is secured passes between two friction rollers. The pressure on the rollers is regulated by cams, and is made sufficient to raise the tup to the proper height, and then suddenly released. An automatic and adjustable stop holds the drop suspended at any height desired, and an automatic trip may be attached to this form of hammer which will permit of a series of blows of uniform force at the will of the operator. The workman has free use of his hands in operating the machine, as its action is governed entirely by the foot treadle. These board drop hammers are made from 250 lbs. to 2,500 lbs. weight of drop, the larger size requiring

a pulley 54 in. diameter and 10½ in. face running at 70 r.p.m. The hammers used in this country for the heavier class of drop forgings, such as the ordinary wrought details for cars and the smaller forgings for locomotives, are much like ordinary steam hammers. They are made double-acting by taking steam above and below the piston and may be run automatically. They may also be regulated to any desired length of stroke for light or heavy work by a special arrangement of the valve gear. These steam drop hammers are built in sizes from 800 lbs. to 10,000 lbs., this figure being the weight of the falling parts. The average size used by locomotive shops is 2,500 lbs.

The anvil for steam drop hammers is usually made 20 times the weight of the falling parts. The foundation for board drop hammers has the anvil resting on 2-in. plank, and below that is a solid mass of concrete forming a cube having a face about twice the largest dimension of the anvil. For the heavier drop hammers operated directly by steam it is important to give careful attention to the foundation, as the constant blows on the anvil have a tendency to cause it to sink and get out of line. The money spent on a thoroughly good foundation support for an anvil made according to the best design available will be well repaid by avoiding the necessity of frequent repairs.

The dies for large pieces may be made of steel castings and some expense saved in shaping the concave portions. The die is made the size of the forging when hot, and usually ½ in. is allowed on each side for the fin. For small dies in which very large numbers of pieces are made, it is profitable either to caseharden these steel dies or to make them of forged steel. Forgings which are not symmetrical and have a boss larger on one side than on the other should have the larger boss in the top die, as the metal flows better in this position and the forging is not so liable to stick. To prevent sticking also it is usual to make the dies taper to the extent of 7 deg. The manifest advantages of die work under drop hammers are understood and realized in automobile and stationary engine factories and by the locomotive builders, but they are not yet fully appreciated by the railways, and the subject is worthy of careful investigation by those who are arranging to equip new smith shops, as well as those who seek to reduce the cost of labor in present shops.

#### LOUISVILLE & NASHVILLE.

There are probably few roads in the country that could have reduced maintenance expenses in the same proportion as did the Louisville & Nashville last year and still show sums spent which compare so favorably with the expenditures of other roads operating in like territory. In the fiscal year ended June 30, 1909, total operating revenues were \$45,400,000, as compared with \$44,600,000 in the previous fiscal year. Total operating expenses last year were \$29,600,000, compared with \$33,600,000. This is a reduction of \$4,000,000, or about 12 per cent.

The drastic cut in the cost of operation was made possible in the first place because over a period of a number of years the Louisville & Nashville had spent unusually large sums for maintenance of the property and for improvements, and secondly because in 1908 the company made no reduction in either maintenance of way or maintenance of equipment from the high expenditures of the year of much greater gross business ended June 30, 1907. Previous to the adoption of the classification of expenses ordered by the Interstate Commerce Commission, the Louisville & Nashville had been charging large sums to maintenance which were actually amounts spent for additions and betterments to the property. The effect of this liberal policy is now manifesting itself both in a reduction in the cost of transportation and in making it possible to greatly reduce the cost of repairs of equipment and of

sums spent on roadbed and right-of-way without lowering the standard of up-keep.

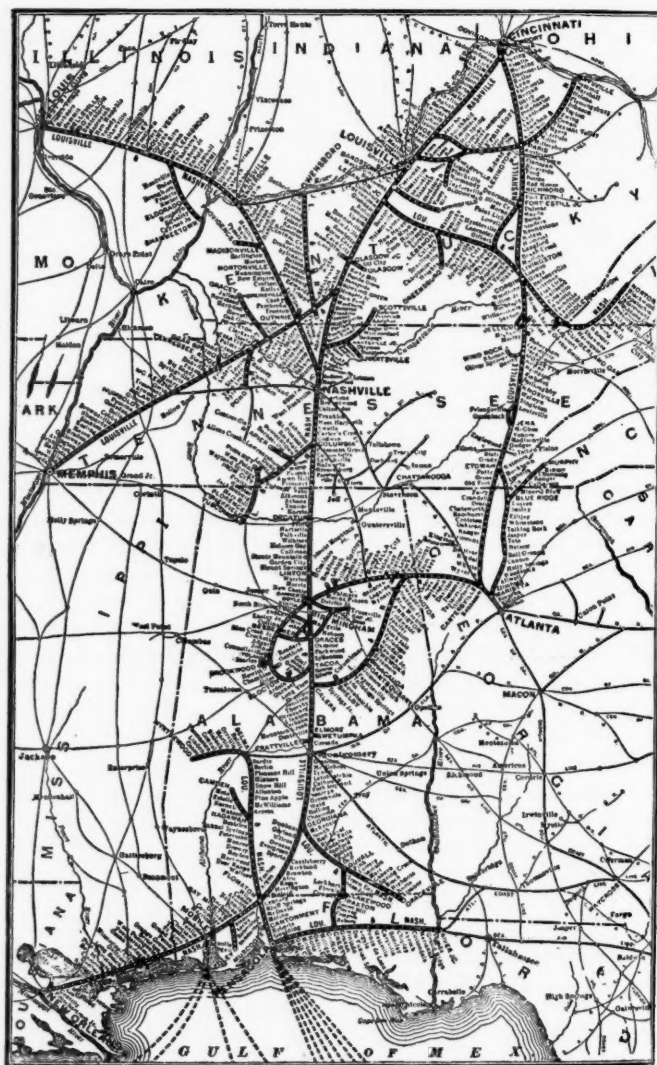
Conducting transportation last year cost \$14,600,000, and the year before, \$16,200,000. Maintenance of way cost \$5,300,000 last year and \$6,300,000 the year before. Maintenance of equipment cost \$7,800,000 in 1909 and \$9,000,000 in 1908. The following table compares the unit costs of maintenance:

	1909.	1908.
Maintenance of way.*	\$1.197	\$1.478
Repairs per locomotive.†	2,786	3,256
"    " passenger car.	763	1,016
"    " freight car.	60	72

\*Per mile of road operated. The company does not list separately its mileage of second, etc., track.

†Does not include renewals, depreciation or superintendence charges.

The sums spent for maintenance of way and structures are not so extraordinary as are the expenditures for maintenance



Louisville & Nashville.

of equipment. Undoubtedly there is a large equity for stockholders in the 1908 and previous years' maintenance of equipment charges, and even last year the sums spent are much larger than other southern roads are in the habit of spending.

The increase in operating revenues, which, although not large, indicate a return of more prosperous conditions in the territory served by the Louisville & Nashville, and the great economies in cost of operation, gave the company last year \$7,700,000 as a surplus earned on its \$59,917,220 outstanding stock. This compares with \$2,800,000 earned on the stock in 1908. In 1909 there was \$870,000 charged for additions and betterments, and in 1908 \$1,700,000 charged for additions and betterments, both of which sums may properly be added to the amount shown as earned on the common stock; so that



in 1909 there was \$8,570,000 earned on this stock, and in 1908 \$4,500,000.

Like a great number of other roads, the Louisville & Nashville had at the beginning of the year considerable financing to arrange. This, in the case of the Nashville, was very successfully accomplished. At the end of 1908 there were \$6,500,000 three-year 5 per cent. notes outstanding that mature March 1, 1910. The company had cash on hand, \$3,500,000, which is a small working capital for a road doing the amount of business that the Louisville & Nashville does. In January, 1909, the company called for payment \$23,000,000 (the entire outstanding issue) of five-twenty 4 per cent. collateral bonds. There were deposited as security for these bonds underlying bonds of the par value of \$29,864,000. These underlying bonds were sold at an average price of 99. The cash received, \$29,565,000, from the sale, provided for the redemption of collateral trust bonds and for the payment of the \$6,500,000 notes, so that on June 30, 1909, the company had on deposit not only the necessary cash to pay off all of the notes and the five-twenty collateral bonds not yet presented for payment, but in addition \$5,990,000 cash. The total current assets in 1909 amounted to \$20,600,000 and the current liabilities to \$14,500,000.

Passenger statistics show, in general, decreases in business handled, with corresponding decreases in revenue from passenger train service. The total number of passengers carried one mile was 433,684,066 in 1909. This is 2.6 per cent. less than in 1908. The average receipts per passenger per mile were 2.32 cents in 1909, a decrease of 2.48 per cent. from the previous year. The average distance each passenger was carried was 43 miles last year and 42 miles the year before.

Freight traffic was not only greater last year than in the year before, but was more economically handled. The number of tons carried one mile totaled 4,256,000,000, which is an increase of 5.86 per cent. over 1908, while the number of miles run by revenue trains totaled 15,400,000, a decrease from 1908 of 6.21 per cent. The average train load was 263 tons. This is greater than in 1908 by 12.54 per cent. The earnings per ton per mile were less by 2.05 per cent. than in 1908, the average being 0.763 cents last year.

The following table compares the results of operation in 1908 and 1909:

	1909.	1908
Average mileage operated.....	4,393	4,348
Freight revenue .....	\$32,465,969	\$31,334,941
Passenger revenue .....	10,062,535	10,590,948
*Total operating revenue .....	45,425,891	44,620,281
Maintenance of way.....	5,257,038	6,291,108
Maintenance of equipment..	7,832,021	9,020,127
Traffic .....	999,655	1,056,279
Transportation .....	14,587,773	16,196,685
*Total operating expenses.....	29,627,499	33,594,291
Taxes .....	1,437,992	1,393,760
*Operating income .....	14,284,845	9,675,291
Gross corporate income .....	15,679,969	10,952,898
Net corporate income .....	8,587,935	4,514,924
Additions and betterments ..	866,547	1,690,468
Dividends .....	3,300,000	3,300,000
Surplus .....	4,421,388	7475,544

\*Outside operations, which are disregarded in both total operating revenues and total operating expenses, are cleared before arriving at the figure for operating income.

†Deficit.

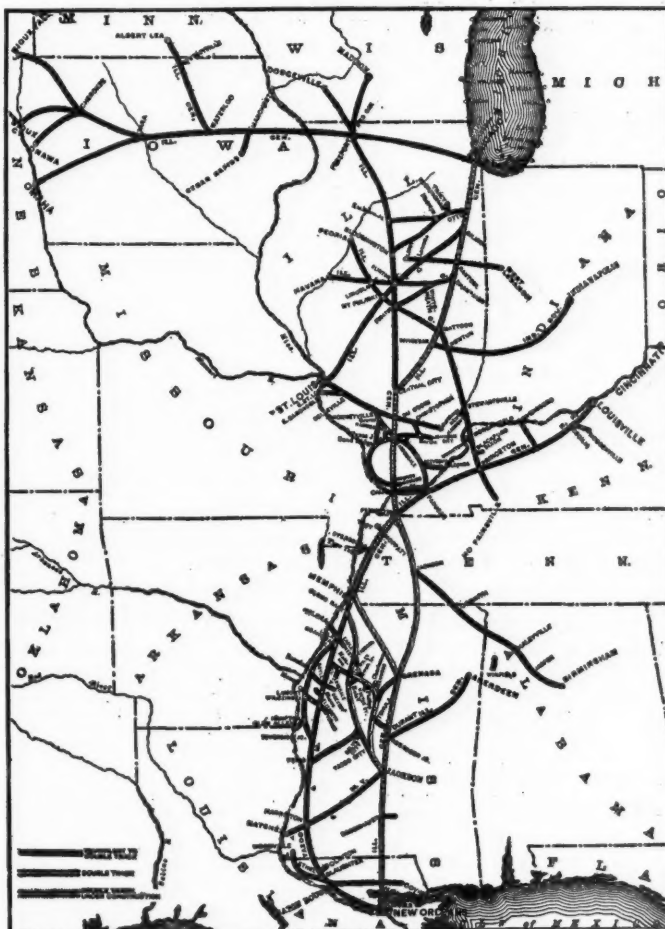
#### ILLINOIS CENTRAL.

The Illinois Central contributes two important services to the general operation of the Harriman system of railways. It forms the base line of the great triangle, the two sides of which are formed by the Union Pacific-Southern Pacific line from Chicago to San Francisco, and by the Southern Pacific line from New Orleans to San Francisco. It originates and collects traffic from the Mississippi valley, routing it either north or south over its own line and there delivering it to the Harriman Pacifics, either at Chicago or at New Orleans.

Besides this, the Illinois Central, through the purchase last year of almost the entire outstanding \$5,000,000 stock of the Central of Georgia, gives the Harriman system of railways an outlet to the Atlantic. The Illinois Central has its own line

to Birmingham, Ala., where it connects directly with the Central of Georgia. The Central of Georgia owns the entire capital stock of the Ocean Steamship Company, which operates a line of steamers between Savannah, Ga., and New York and Boston. The Illinois Central paid \$3,470,000 for the \$4,998,500 stock of the Georgia road, and at present this investment is yielding no interest directly since the Central of Georgia is not paying dividends on its stock. The advantage of such an arrangement lies in the additional traffic which it is expected the Georgia road will turn over at Birmingham to the Illinois Central.

To pay for this Central of Georgia stock and to pay off a floating debt of \$8,400,000 and reduce the loans and bills



Illinois Central.

payable from \$15,200,000 to \$1,600,000, the company sold during the year \$20,000,000 refunding mortgage 4 per cent. bonds and \$14,256,000 additional stock was issued at par. The balance sheet shows beside the reduction in liabilities just mentioned that the company has increased its current assets from \$11,000,000 in 1908 to \$13,600,000 in 1909. Of these current assets \$2,900,000 was cash in 1909 and \$1,600,000 cash in 1908. The refunding mortgage made last year secures an authorized issue of \$120,000,000 bonds, of which \$61,766,000 are reserved to retire prior lien bonds, and \$10,000,000 are to be issued only to pay for the property of the Indianapolis Southern, in case the Illinois Central decides to exercise its option on this property.

In the fiscal year ended June 30, 1909, gross operating income including income from transactions "incident to operation" amounted to \$57,100,000, as against \$57,997,000 in 1908. The decrease in revenues is due to a reduction of \$1,800,000 in the sums received from hire of equipment; this sum was \$1,700,000 last year. The loss is due to the falling off in use of the cars of the Illinois Central by other roads and to the reduction in the per diem rate from 50 cents, in force during

eight months of the 1908 year, to 25 cents, in force during the entire 1909 year. Freight revenue was \$36,000,000 last year as against \$35,400,000 the year before. The tons of revenue freight carried one mile amounted to 6,043,000,000 in 1909 and to 6,039,000,000 in 1908. The average revenue per ton per mile was 0.596 cents in 1909 and 0.586 cents in 1908. The average distance carried per ton was 242.91 miles last year and 241.09 miles the year before. This is a very long average haul. It compares, for instance, with an average haul of 174 miles on the Louisville & Nashville, which operates in much the same territory and has approximately about the same mileage operated. The earnings per ton per mile are not as great on the Central as on the Louisville & Nashville by 0.167 cents per ton per mile.

Passenger revenue last year amounted to \$10,900,000 as against \$10,990,000 the year before. The number of passengers carried one mile was 592,000,000 in 1909, almost exactly the same as in 1908. The receipts per passenger per mile amounted to 1.836 cents last year and to 1.857 cents in the previous year.

The revenue trainload was 355 tons in 1909 and 352 in 1908. While the loaded freight car mileage increased 1.66 per cent. over 1908 and totaled 327,600,000, in 1909 the empty freight car mileage decreased by 1.94 per cent. and totaled 143,100,000 in 1909.

Although gross expenses excluding taxes amounted to \$41,400,000, or \$985,000 less than in 1908, the cost of maintenance of equipment was \$11,300,000 last year, an increase over the previous year of \$1,800,000. The greater part of the decrease in operating expenses is accounted for by a reduction from \$4,450,000 to \$2,990,000 in the payments made for hire of equipment. Similar reasons to those given for the decrease in hire of equipment receipts apply equally to the reduction in hire of equipment expenses. Transportation cost \$18,600,000 in 1909 and \$19,500,000 in 1908. Maintenance of way cost \$6,200,000 last year and \$6,600,000 the year before. The cost of maintenance of equipment, as a whole, has already been mentioned.

The following table shows the unit cost of maintenance:

	1909.	1908.
Maintenance of way*.....	\$1,162	\$1,267
Repairs and renewals per locomotive.†.	3,060	2,680
"    "    "    "    pass'ger car.	952	798
"    "    "    "    frt. train car	100	80

\*Cost of maintenance per mile of first, second, etc., main track, no allowance being made for maintenance of siding and switch tracks.

†Repairs and renewals of equipment are taken and presumably depreciation is included, although the company's report does not make this clear.

There was spent on capital account for additions and betterments in 1909 \$1,400,000. Of this total, \$900,000 was for cost of property at New Orleans, adjoining the Poydras street terminus of the Yazoo & Mississippi Valley.

There has been a good deal of agitation in Chicago looking toward the electrification of the terminal lines of the Illinois Central in the city of Chicago. President Harahan comments on this as follows:

"The subject of electrification of the Chicago terminals of this company has had and is having most earnest and thorough consideration. The problems presented are unique and complex.

"There are no great freight terminals operated by electricity, and it is questionable, even aside from the great expense involved, if it is practicable. There are over three hundred and ten miles of track in the terminals, and there is a very heavy exchange of cars between this road and other roads in Chicago; to effect this exchange it is necessary that the trains of this company shall go upon the tracks of other companies, and that their trains shall come on our tracks; with this road alone electrified, this exchange of cars would not be practicable.

"Without precedent to guide, the estimates of cost are at best unreliable; from the best obtainable information it would appear that the cost of electrifying the terminals of this com-

pany would be more than \$18,000,000, a great sum to expend on what would be of doubtful success in operation.

"Earnest and painstaking investigation and consideration are being given to the subject, and pending a solution of the problem that will be satisfactory to all the interests concerned, this company is devoting great attention to reducing to a minimum the noise and smoke of its locomotives."

The following table compares the results of operation in 1909 and 1908:

	1909.	1908.
Average mileage operated.....	4,547	4,420
Freight revenue .....	\$36,003,897	\$35,357,811
Passenger revenue .....	10,865,359	10,991,798
Total operating revenue*.....	53,672,336	52,830,427
Maintenance of way .....	6,196,287	6,568,065
Maintenance of equipment..	11,265,627	9,456,284
Traffic .....	1,177,356	1,206,276
Transportation .....	18,617,942	19,460,420
Total operating expenses*.....	38,415,639	37,941,248
Taxes .....	2,276,969	2,190,173
Net operating income*.....	13,464,230	13,417,129
Gross corporate income .....	17,338,938	15,775,654
Net corporate income .....	8,183,837	7,996,399
Dividends .....	7,650,720	6,652,800
Replacement of equipment....	232,267	1,046,963
Surplus .....	300,850	296,636

\*Neither the revenue nor the expenses of "transactions incident to operation," which includes hire of equipment, etc., are included in the total operating figures given in the above table, but these operations are cleared before the figure for net income is arrived at.

## NEW BOOKS.

*Alternating Current Machines.* Seventh Edition. By Hobart Mason and Erich Hausmann. New York: D. Van Nostrand Co.; London: Crosby, Lockwood & Son. 353 pages; 5 in. x 7½ in.; 236 illustrations; Cloth. Price, \$2.50.

This book is a companion volume to the book on direct-current machines by the same authors and is intended as a textbook for use in technical educational institutions. An intelligent reading must be prefaced with a pretty thorough familiarity with higher mathematics, for it is essentially a mathematical treatise from the start and would be impossible of comprehension to anyone not conversant with calculus. The book opens with a chapter on the properties of alternating currents, in which the current is defined, and its frequency, wave shape and distortion are explained. This is followed by chapters on self-induction, capacity, alternating-current circuits, alternators, the transformer, induction motors, synchronous motors, single-phase commutator motors, converters and power transmission. In this there are a few instances of examples from practice in construction work, but for the most part the work is confined to a mathematical discussion of the various headings given.

*Railroad Engineering.* By Walter Loring Webb. Chicago: The American School of Correspondence. 296 pages; 6½ in. by 9½ in.; 158 illustrations; cloth. Price, \$3.00.

A review of *Railroad Construction*, by the same author, was published in the *Railroad Age Gazette*, April 30, 1909. The former book was a compound of a treatise and a pocketbook on the subject. The book now under review has entirely different text, and shows that the pocketbook has been rewritten to meet the requirements of the school, which aims to lay special stress on the practical side of the subjects handled in the series of its publications and to have the volumes adapted to the purposes of home study and self instruction. So, while the general order and arrangement of the earlier book has been followed, this one is distinct and complete in itself.

It opens with a statement of the general principles involved in a railway survey and then outlines the methods to be followed in reconnaissance and preliminary work and afterwards in the location. Considerable space is devoted to the laying out of curves, simple, compound and vertical, as well as to the various types of transition curves. Then follows a chapter on earthwork and computation of the volumes, which is closely allied to tunnel work. The first part closes with a discussion of trestle construction and the methods used in their floor design.

The second part takes up miscellaneous structures, such as



the water supply, turntables, engine-houses, cattle guards and track materials. Switches, crossings and signals are also carefully considered in considerable detail. The third part deals with the subject of railway economics, with chapters on capitalization, stocks and bonds, revenue, the methods of conducting transportation and the principles of economic location.

The language is simple and clear, and the formulas of higher mathematics have been avoided without sacrificing the essentials of practical instruction. The work is carried along by consecutive steps in a way to lead naturally from the first conception of a line to the finished and operable road; an arrangement that will lend itself readily to convenient and easy reference.

*Bricklaying System.* By Frank B. Gilbreth. The M. C. Clark Publishing Co., New York and Chicago. E. & F. N. Spon, Ltd., London. 321 pages; 167 illustrations, 4 plans, 71 charts; 6¼ in. by 9¼ in. Cloth. Price, \$3.00, net postpaid.

Mr. Gilbreth is a man of much force, originality of thought and activity; his book reflects his personality and tells much of his success as a builder of masonry. The purposes of the book are to record the knowledge of the journeyman which has been handed down by word of mouth to the apprentice for generations, the methods of handling labor, materials and plant in order to reduce costs and at the same time to enable the skilled workman to receive higher pay and to assist an apprentice in order that he may become a proficient workman.

The book is divided into 29 chapters and is a series of paragraphs numbered as rules of which there are 974; each chapter under the table of contents has the more important features again numbered, and the entire book is well indexed by page and rule numbers. It is not clear what is gained by this elaboration of indexing. At the end is an excellent glossary of terms. The chapters are not in strict sequence, but cover Training Apprentices, Methods of Management, Routing of Materials (to and on the job), Scaffolds, Bricklayers' Tools, Brick, Mortar, Methods of Laying, Motion Study, Special Work of Chimneys and Arches, and Bond. The author writes in a clear, vigorous style and with a mastery of the subject, which is not only instructive, but most interesting. The illustrations add much to the text; most of them are photographic reproductions from actual work, and there are a number of the San Francisco disaster. Perhaps the most valuable portion of the book is that relating to Motion Study. "The fastest bricklayers and generally the best bricklayers are those who use the fewest motions and not those who are naturally the quickest motioned." By charts and illustrations he shows how in laying the exterior 4 inches of a wall by "pick and dip" method the wrong way may take 18 motions which the right way can reduce to 4½, and for the center of the wall 18 motions may be reduced to 2. By the "stringing mortar" method for the center of the wall 18 motions may be reduced to 1¼. While the book naturally recites the merits of the author's special methods and appliances, it describes others, and is replete with many suggestions and "tricks of the trade" tending to economy, speed and safety of work and workmen.

The book is instructive to any manager of construction work if for no other reason than because of its discussion of the value of system and a thorough knowledge of the details of management. From this point of view it should be suggestive of many important and minor means of improving the conduct of construction work. The chapter on Methods of Management is particularly instructive and discusses the selection and grouping of men, division of work, athletic contests, score keeping, checking up of work, and rewards and bonuses.

To the engineer, architect or workman, who has brickwork to be done or to do, there is, from cover to cover, interest and value. Mr. Gilbreth appeals most to the ambitious apprentice, and he strikes the key note when he refers to the bricklayer's trade as one of the oldest, most respectable and most desirable of trades.

## Letters to the Editor.

### INSPECTION OF SMALL STATIONS.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

The article on "A Staff Officer in Charge of Station Agents," in your issue of September 24, calls up many memories. That class usually termed "one man stations," where the agent is also the telegrapher, mail carrier (if his station be within the limit), and express agent, is the most interesting. I once worked on a road where there was an official designated as "superintendent of stations," but the good work that might have been accomplished by that official was delegated to a subordinate styled "inspector of stations." This man could write a stronger letter on "dirty windows" than on any other subject.

The station agent is not a trained man. In this day of schedules and seniority ruling, promotions cannot be made on merit, and the job has to be put up to be bidden for. The only way therefore to improve conditions is to train the man. This cannot be done by the elaborate instructions and regulations which are usually issued. It must be done by an officer who should be familiar with the duties required of a station agent and clothed with enough authority to command respect; and whose commendation would be something worth striving for.

I well recall the feeling of pride experienced by me a few months after entering the service at the age of seventeen, upon receipt of a letter reading as follows:

"I note with pleasure the manner in which you have been keeping up your station work, not only so far as accounts are concerned, but in point of cleanliness as well. This is appreciated by the management.

....., Superintendent."

You may be assured that there was nothing I considered too much to do to help out the popularity of that official's administration, both with the public and with fellow employees on the railway.

With a word as to the manner of exercising this supervision: Don't make the rounds on the "varnished cars," and, stepping off, extend a kid-gloved hand to the agent; ride the way-freights. See if he or his assistant is on hand to check the freight. \* \* \* The business may have far outgrown the size of his freight house; you will be in a position to judge of this. He may, as he tells you his troubles, claim he has not help enough to properly handle the business; it is for you to decide if his claim is entitled to consideration.

An agent is busy selling tickets, checking baggage and billing express for a passenger train soon due. The local freight pulls in and the crew fills his freight house to the doors, and incidentally they leave a piano and a few barrels of sugar out under the eaves; a shower comes up, the piano and the sugar get a wetting, and the agent cannot convince the freight claim agent (or the superintendent) that he was not wilfully negligent and responsible for the damage.

Spend a few hours with the agent. Note the general appearance of his station and office. Does he keep a cash book? It may be a very small station, but a man that does not start right can never successfully handle a larger one. Look over his stock of stationery, find out if he ever takes an inventory of it, or does he order a whole box of pens, and a full supply of forms, regardless of the quantity on hand? While acting as relief agent some years ago, I often found sufficient stationery to last a year or two, some of it becoming obsolete. The stationery item of a railroad is no small affair. The periodical spasms of economy which strike every railroad, drive every agent on the road into dishonesty. The blue pencil cuts off half of his stationery requisition, and he is driven to the expedient of ordering double the quantity needed with the hope of getting half of it. An agent should order

just enough to supply his needs, and fight for that until he gets it.

Show him the importance of mailing notification postals promptly, and if he has a telephone, to use that also. Another very important thing is the prompt release of cars. \* \* \*

See if the agent is making proper check of freight on receipt and delivery. He may be giving the key to neighbor Jones to get his freight; Jones was short a bag of flour some weeks back, and finding one that will square him, tears the tag off, takes it home, saying nothing, and the company pays for two bags of flour.

Show the agent that you are concerned in his welfare. If in anything he is lax tell him so in a tactful manner on the spot; don't go back to the office and write him a scorching letter about it. That will not increase his respect for you. On your next visit note any improvement, and compliment him on it.

The station inspector may well include in his duties some supervision over the handling of the freight at stations by the local freight crew. Although this usually falls to the duty of the train master, not enough attention is given it. \* \* \*

F. F. B.

#### COST OF SERVICE THEORY OF MAKING RAILWAY RATES.

Oklahoma City, Oct. 28, 1909.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

This will refer to your editorial in your issue of October 22, page 738, regarding the cost of service standard of making railway rates. I do not know what may be the position of Messrs. McCune and Babcock, but I do know that the undersigned has never taken the position that cost of service should be the only criterion upon which to establish fair freight rates.

If we had no experience to guide us in undertaking the establishment of a general system of railway rates it is more than likely that the chief factors to be considered would be classification, distance table and graduated distance rates. But we are not entering a virgin field and consequently have to be governed to a large extent by established conditions. Every special commodity rate which has been established, whether for the purpose of securing larger minimum weight than would otherwise be obtained, for encouraging jobbing business, thus moving the freight in full carloads for a great proportion of the total distance instead of in less than carload quantities, for meeting competition of freight from some other direction or for any other purpose; also every exception to the standard classification, for whatever reason adopted is a departure from first principles and has to be taken into account in dealing with the rate situation at the present time.

What we have always claimed, and now reiterate, is that comparatively as between two manufacturers, two jobbers or two retailers for that matter, handling the same kind of freight, if a railway has discriminated in favor of one by performing the same or similar service for less money than for the other, it should be obligated to similarly legislate in favor of the other and equalize its basis of charges or be convicted of undue and unjust discrimination.

We think it absurd to claim that a common carrier should have to transport a given weight of hardware or dry goods for the same charge for which it would move that weight of sand, and we are not willing to have you try to force us into defending such a position, which we have never assumed.

It is true that jobbers and manufacturers are more interested in equality of rates with their competitors than in the actual volume of the charge, but producers, and more especially consumers, are vitally interested in the volume, and hence both phases must be carefully considered in the establishment of rate schedules.

J. H. JOHNSTON,

Traffic Manager, Oklahoma Shippers' Association.

## Contributed Papers.

### SOME REASONS WHY RAILWAYS ARE UNPOPULAR.

BY SAMUEL O. DUNN,

Western Editorial Manager, *Railroad Age Gazette*.

The number of persons who rode on the railways of the United States in the year ended June 30, 1907, was 873,905,133. If one should find out how many of them were irritated or angered by the incivility or inconvenienced by the carelessness or incompetency of employees or by easily curable defects of service, he would get some important and valuable data about why railways are unpopular. Most of the loud and strident outcry against railways comes from shippers. They say that the unpopularity the roads suffer under is due to high or discriminatory freight rates, to the harsh enforcement of demurrage rules and to other things of that kind. But in this they seem much like the fly in the fable which, while riding on the wheel of a vehicle, took to itself the credit for all the dust that the vehicle raised. There are hundreds of people who ride in trains to one who ships goods in them; and there are a great many shippers who do not complain—who have no cause to complain—to every one who does. The public sentiment that causes the roads most of their trouble is perhaps not that of the people who pay freight charges but that of the people who pay passenger fares. And most of these are soured against the roads, not because they think the fares they are charged are excessive or because they do not get as good transportation as they pay for, but because they think—and too often with good reason—that they frequently are not treated with the decent courtesy and consideration to which they are entitled. Passengers who have real grievances, or honestly think they have, are easily persuaded that shippers who complain also must have real grievances. What is more natural than to think that if a road or its employees treat badly those who ride in its passenger trains, it seems not improbable that it also treats badly those who ship in its freight trains? And so the traveling public joins with the shipping public in denouncing and agitating against the roads.

What are some of these occurrences which are constantly irritating the traveling public? An ounce of specific instance is often worth a pound of generalities. A man whose feelings toward railways are most friendly recently traveled 10,000 miles on 16 different roads. He went to the Atlantic and to the Pacific. He was as far south as southern Missouri, and as far north as Donald, British Columbia. He rode on main lines and branches, on the finest through trains and on some pretty poor locals. He bought tickets in city ticket offices and at the windows of country stations. He was on Pullman cars, parlor cars and day coaches. Before he had been out long he began to make a note of instances of incivility to passengers and needless defects of service. Not all such instances that he noted will be mentioned here. They would take too much space. But it may be worth while to mention some of them. Perhaps they will help some readers to get the passenger's point of view. And if there is any greater need of American railways than for the patrons of railways to get the railway men's view, this need is for railway men to get their patrons' point of view. People who chronically misunderstand and misinterpret each other cannot maintain harmonious business relations.

At 2 o'clock p.m. one day our traveler telephoned to the station agent at a small town in the Middle West to wire for a lower berth for him on an eastbound train that was due at 8:30 p.m. The agent replied that it wasn't necessary to wire—that the eastbound trains were running light and there would be plenty of available lowers. The traveler answered that he didn't want to take the chance of having to ride in an upper and wished the agent would wire. But the



agent would not do it. When the train came in the traveler handed his suit case to the porter and asked the Pullman conductor for a lower berth. The conductor replied that all lowers were taken except two which were reserved for a town that the train reached at 1 o'clock a.m. The traveler was told that if he would sit up till then he might get one of these. The conductor added that if the agent had wired when he was asked to a lower could have been got. Now, the management of the road was not directly to blame for the agent's failure to do his duty. The traveler happened to know that there is not a railway in the country whose higher officers understand better the need for treating their patrons well, or who are trying harder or with better general success to get them treated well. But how many passengers who are similarly treated by employees of the road know anything about the characters or aims of its higher officers? Most patrons of railways judge of the management of a railway entirely by what is done by its employees.

Almost everyone who enters or leaves a train passes through a station. Every day hundreds of thousands of people have to wait in stations for trains from a few minutes to several hours. It would be an insult to the intelligence of railway men to tell them that for the good of both the companies and their patrons stations ought to be kept light, clean and sanitary. But the number of them, large or small, that is not kept either clean, light or sanitary must be less than the number that is. Our traveler had to wait from 8:30 to 10:30 a.m. between trains in a union station at a large railway center, which is used by nine railways, several of them among the most prosperous roads in the country. It was greatly crowded. Tourist travel was at its height. Thousands of people were going through daily. It would seem that at such a time, if ever, a special effort ought to be made to get and keep a station clean. But this one was filthy beyond description. It must have occurred to many tourists as they went through this station that the roads using it ought to pay out less for dividends and more for soap, and for mops and porters to use them.

If there is any place on a railway where people ought to be able to get civil answers to their questions it is at information bureaus in stations. When a railway puts up a sign, "Information Bureau," it is equivalent to an invitation to all persons to step up and ask any questions that they wish with confidence that they will be given civil and helpful replies. At the information bureau in a union station in the West through which probably more tourists passed than through any other station in the country last spring, summer and fall, our traveler asked the man at the desk to give him the times of departure of the various through trains to the next large city. The number of through trains to it was small. The information could easily be given. The man at the desk blurted it all out in a single breath. The traveler said he did not understand the matter clearly and asked for more details. "That's all there is to tell," the man replied and walked away. The traveler called after him, "Haven't you an Official Guide? I can get the information myself." He was told there was no Guide available. And that is all the satisfaction he got. He knew no more than before he asked his question. Now, this man is an experienced traveler. If he was treated thus, how much worse had thousands of inexperienced travelers, whose questions were more adapted to try the patience, been treated? How many tourists this uncivil employee made curse railways during the six months from May to October would be hard to estimate. It is harder to say why railways kept such a man in such a place.

A man and his wife were riding on a local train on a road which has train auditors on a part of its trains. When the auditor took up their tickets he put a single check in the hat of the man. A little while later the man went forward to the smoker, and when the train auditor came through again he asked the woman for her ticket. She replied that her

husband had given it to him. The auditor asked where her check was. She answered that the auditor had given only one check and her husband had it. The auditor curtly replied, "You ought to have a check too." She blandly answered, "It's not my fault, is it, if you did not give me a check?" Of course, she repeated the incident to her husband and to everyone else on the train with whom she talked, thus contributing her little share toward making railways unpopular.

Our traveler, who witnessed the above incident, rode about 100 miles on that train. Before he reached his station he went to the toilet room to remove the stains of travel. He found a good tank, well filled with water, and a good lavatory, but no soap and no towel. The inquiry was naturally suggested why the road went to the expense of providing the tank and lavatory if it could not afford the additional expense of providing the soap and towel necessary to make them of any use.

While our traveler was stopping at a small town he learned that one of the railways had in its employ a crippled man who was notorious for having the worst disposition in town. Perhaps he had been kept in the road's employ because of sympathy with his affliction. Was it, or was it not, a good example of railway diplomacy that he was put to selling tickets so that he could insult as many people as possible?

At one small place our traveler heard loud complaints from a business man because he had gone down to the station to catch a through train which previously had been due at 4:37 a.m. but whose time was changed without warning that day to 4 a.m. Inquiry disclosed that no public announcement of the change in the schedule had been made. If it inconvenienced and irritated one man here, how many did it inconvenience and irritate at all points along the line through which the train passed?

Our traveler got on a through train which is scheduled to run between two large cities in 28 hours. In about an hour it was set on a side track. Inquiry as to the cause brought the information that a small wreck ahead would probably make it necessary for the train to stand where it was all night. It did not begin to move again for 11 hours. When it did begin to move again it also began to lose more time, and when it reached its destination it was 16 hours late. The conductor was asked whether his train was often late. He replied that it was usually about five hours late. The same question was asked of the dining car conductor. He said that the train was usually about seven hours late. Now, what legitimate object can a railway have in persistently printing schedules which experience has demonstrated its trains cannot make? Passengers generally will not complain much about slow trains if slow schedules are printed for them, but the printing of fast schedules for slow trains constantly causes trouble. The passenger usually makes reservations on connecting trains, for business or social engagements, with the expectation of reaching destination on schedule time. If the train is late without mighty good reason every passenger is apt to get off a critic and an enemy of the road.

A woman and a little boy about five years old got on a through train at night. All lower berths being taken, they got in an upper. The next morning she asked the sleeping car conductor to give her a lower berth for the next night if one should be vacated at a large city which they were to pass through. He said lower 4 on the car she was in would be vacant and promised it to her. A change in sleeping car conductors is regularly made at the city referred to. While the off-going and on-coming conductor were making the transfer the woman asked the former in the presence of the latter to see that he had her down for lower 4. He said he would do so. But she thought she saw him wink at the on-coming conductor. As she had given neither a tip she feared she was not going to get a square deal. Sure enough, after the train got in motion and she asked to be transferred to lower 4 the new conductor informed her it had been sold.

She insisted on having the berth that had been promised and threatened to report the incident. The conductor went away and soon came back to tell her that a gentleman in the car would give her his lower. She said she would not allow any passenger who had paid for a berth to give it up to her. The conductor replied that the gentleman who was willing to give up his lower was a Pullman conductor who was being "dead-headed" through. In other words, if she had not threatened to complain she and her little boy would have been put in an upper berth while the Pullman conductor who was being "dead-headed" would have reposed in a lower.

The foregoing by no means exhausts the list of instances of incivility and bad service that our traveler noted. The incidents related are given not because they are exceptional, but because they are typical. If one observant traveler can, in a comparatively short time, see scores of incidents of this sort, how many must take place on all of the 230,000 miles of railway in the United States in a year?

It is not imagined that this article contains information about a situation with which railway officers are not acquainted. They are receiving complaints daily which make them only too familiar with the conditions. Unfortunately, the higher officers do not often themselves have just the kind of experience that passengers do. Business necessity compels many of them to do most of their traveling in private cars. They are so well known that even when they ride on ordinary coaches or sleepers employees at once identify them and get on their good behavior. Once in a while, however, railway officers do meet with the treatment so often given to ordinary passengers. The results are usually salutary to the service.

A general passenger agent of a large railway got on a train the other day on a part of his line where he is not well known. When the dining car conductor placed a menu card before him the general passenger agent said: "Well, what have you got to eat to-day that is good?" The conductor put on a supercilious air and with a lofty wave of his hand replied: "It is all good," and walked away. Presently the general passenger agent saw in a mirror the reflection of the train conductor, who had just examined his pass, motioning for the dining car conductor to come out to the entrance of the car. Information as to the identity of the officer was evidently imparted, for the dining car conductor soon came back and with obsequious manner and tones began to apologize for his previous air. The general passenger agent told him to go and make his apologies to the general public, as he had no doubt that the manner in which he had treated him was his characteristic manner toward people who had to pay their fare. He then read him a lecture on civility and courtesy, which, in the circumstances, was adapted to sink in.

A short time ago a passenger on a dining car on a certain road ordered a sirloin steak. The waiter brought him a small steak cooked to a crisp. The passenger said he hadn't asked for that, and demanded that his order be filled as given. The dining car conductor, being called, said that since the small steak had been served the passenger would have to take it. A beetle-browed man with snappy black eyes sitting across the table interjected a sharp "Why?" The dining car conductor replied it was none of his business. The beetle-browed man answered: "It is a lot of my business and I want to know why you can't give this man what he ordered." The dining car conductor explained that it would mix up his accounts. The beetle-browed man replied that the passenger had no interest in that—that his only interest was in getting what he ordered. The dining car conductor refusing to rectify the mistake, the beetle-browed man handed him a card showing he was assistant general freight agent of the road, and told the conductor that unless he filled the passenger's order in ten minutes he would have him discharged. Then the order was correctly and promptly filled.

On another occasion the same assistant general freight agent got off a train on his line to stretch his legs when a stop was made. He noticed that the porter had not put down his

step, and that passengers who were getting off were inconvenienced. He said to the porter: "Why don't you put down your step?" The porter replied: "You 'tend to your business, boss, and I'll 'tend to mine." "I will attend to my business and yours, too," the assistant general freight agent said, and he stepped over to the station and sent a telegram asking that the porter be taken off at the next stop and discharged from the service of the company, which was done.

Perhaps if such swift, retributive justice oftener overtook uncivil employees the service would be improved and the number of critics and enemies of railways reduced. But railways cannot afford to hire Chesterfields for all subordinate positions, and it is felt that when they discharge one uncivil employee they are as apt as not to get one as bad or worse in his place. Railway managers have been wrestling with the problem for many years. There is hardly a road which does not have placards in its stations and on its trains urging on employees the need for treating patrons civilly, and inviting the public to send in complaints of bad treatment. Meetings of ticket agents are frequently held at which passenger and operating officers discourse eloquently on this subject. There is no question that there has been a material improvement within recent years. But there is much room for further improvement. All railway officers recognize this.

One means of reform that has been suggested is to establish schools for the instruction of employees in the way to deal with the public similar to those in which operating employees are taught how to carry out the rules for safe operation. The solution of the problem of getting the public properly treated seems to merit something like the serious and persevering effort that is made to solve the problem of getting trains safely operated. Constant tests of the obedience given to block signals are made. When the tests show failures discipline follows. The published reports indicate that more than 99 per cent. of the signals are obeyed. When tests of the treatment that employees give to the public become so systematic and the discipline administered so effective that 99 per cent. of the people who ride on trains get the courteous treatment to which they are entitled railways will enjoy a degree of popularity which they now anxiously desire but are far from approaching.

#### RIVER PROTECTION ON THE KANSAS CITY SOUTHERN.

BY J. A. LAHMER,  
Principal Assistant Engineer.

When the branch of the Kansas City Southern to Fort Smith, Ark., was built, in 1898, the track was about one-quarter mile from the nearest point on the bank of the Arkansas river, near Braden, Okla. In recent years the river has been eroding its south bank at this place, so that in July, 1908, after the spring rise, it was 330 ft. from the track to the river. In the fall of that year there were unusual floods which caused the cutting of the bank to continue until the river was within 180 ft. of the center of the track early in December, and erosion was proceeding rapidly. On account of topographic conditions it was not advisable to make a permanent change in the location of the track.

The danger of a wash-out was averted temporarily by rolling into the river large cylindrical bundles of brush, 6 or 8 ft. in diameter and from 50 to 150 ft. long, one end of each bundle being anchored to the track by cables. These bundles of brush contained a layer of sand bags, which caused the brush to sink, and the current held the brush against the bank. All this work was done while the river was at flood stage. The brushwork held and the river did not approach nearer than 50 ft. to the track.

Before the temporary work was completed preparations

\*From a paper presented before the American Society of Civil Engineers, Nov. 3, 1909; published in the *Proceedings* for October, page 1106.

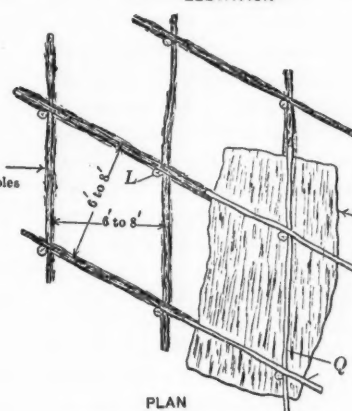
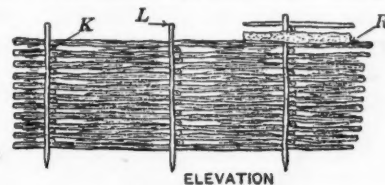
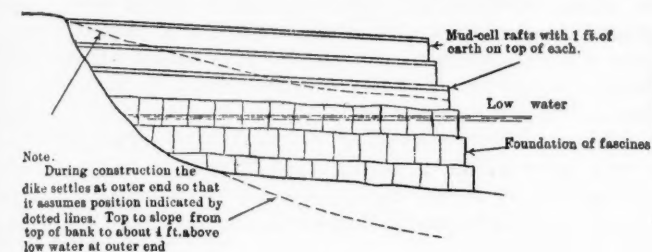


were made for more durable protection; in fact, plans had been adopted before the occurrence of the unexpected rise of December, 1908. The David Neale system of brush dikes was selected and the work was done by company forces. Details are shown in the accompanying drawings.

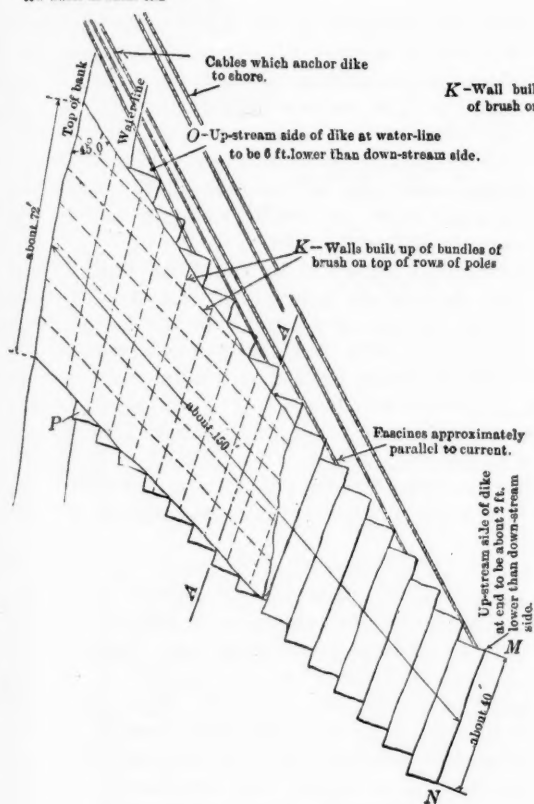
Each dike consists of a foundation of fascines, on which two or more stories or tiers of mud-cell rafts are built. The base of a fascine is made of a bottom layer of poles, *E*, from 4 to 6 in. in diameter and from 18 to 30 ft. long, on which there is a layer of brush, *F*, 1 ft. thick. The brush and poles are laid longitudinally, with the butt ends of the brush outward at the ends of the fascine. Cross-walls, *G*, and side-walls, *H*, of brush are built on this floor in alternate courses from 10 to 12 in. thick, so that the fascine is divided into a series of cells from 6 to 8 ft. square and from 6 to 8 ft. deep. The length of the fascine was made equal to the width of

The first few fascines are built on the bank of the river and rolled into the water, until there are enough to form a space on which a fascine can be built and from which it can be rolled to the position it is to occupy in the dike. The work is continued until a foundation of the required width and length has been provided for the dike, the height of the foundation being such that the upper surface of the upper layer of fascines is above water level. Care is taken to place the fascine approximately parallel to the thread of the current, and to set each one a little down stream from the preceding one, in order to form an angle of approximately 45 deg. between the thread of the current and the up-stream line of the fascine.

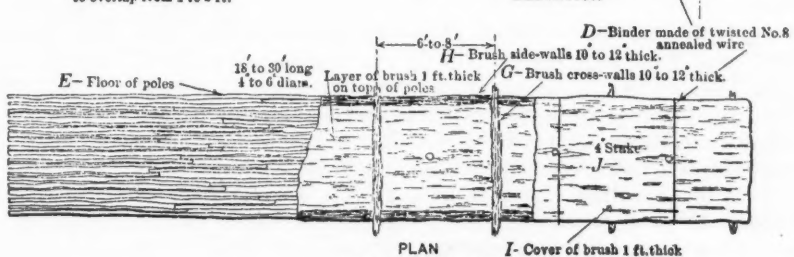
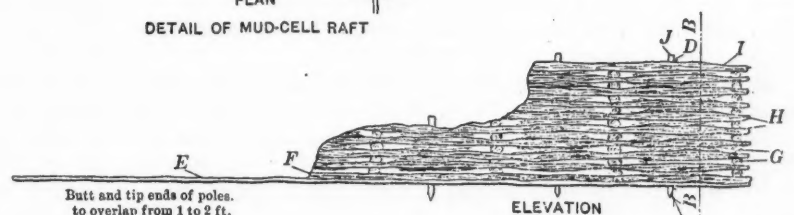
The lower mud-cell raft is started by laying rows of poles, from 4 to 6 in. thick, on top of the fascine foundation, lengthwise and crosswise of the dike, and from 6 to 8 ft. apart, as



DETAIL OF MUD-CELL RAFT



Elevation and Plan of Dike.



DETAIL OF FASCINE  
Details of Raft and Fascine.

Details of Dikes for River Protection; Kansas City Southern.

the dike. The top of the fascine is a layer of brush, *I*, 1 ft. thick. The brush, in the walls and the top layer, is placed with the butt ends outward at the ends of the fascine.

An anchor of 6-in. poles, about 10 ft. long, is built in the second cross-wall from the up-stream end of the fascine. A  $\frac{3}{4}$ -in. or  $\frac{7}{8}$ -in. steel or iron cable (usually second-hand), secured to a post or tree on shore, is fastened to this anchor. Only every third or fourth fascine is anchored to the shore in this way, the intermediate ones being tied by short cables to one of the cables which extends to the bank. Each cell is tied at the middle by a binder, made of three strands of No. 8 annealed wire, tightened by having its slack wound around a 4-in. stake driven vertically through each cell.

shown at *K*. The poles are wired together where they cross and are also wired to the binders of the upper course of fascines. At each intersection of the poles a stake, *L*, from 4 to 6 in. in diameter and from 8 to 10 ft. long, is nailed in a vertical position. A tie, of No. 8 annealed wire, is placed under the poles at each intersection and passed up along the stake, the ends of the tie extending about 1 ft. above the top of the stake. Walls of brush, *K*, are built in 10 or 12-in. courses along the rows of poles and on the up-stream and shore sides of the stakes, the courses being alternated lengthwise and crosswise of the dike until the walls are as high as the stakes.

The heights of the walls are regulated so that the finished

dike at the outer end will be about 2 ft. lower on the up-stream side than on the down-stream side, and, at the shore end of the dike, the up-stream side will be about 6 ft. lower than the down-stream side, the object being to give the top of the dike a plowshare shape to deflect the current as much as possible.

A cover of brush 1 ft. thick is built over the raft, the brush being placed approximately parallel to the thread of the current, with its butt ends outward at the up-stream and down-stream edges of the dike. On top of the brush cover, rows of poles are laid so as to intersect at the vertical stakes, the ends of the wires which were brought up the stakes being tied around the poles at the intersections. The wires are then twisted tight, so that the upper and lower framework of poles and the intervening brush will be bound together.

Each mud-cell raft is covered with a layer of earth, from 10 to 12 in. deep, care being taken to leave the poles exposed at their intersections. The wires which unite the poles at the bottom and top of the raft are again tightened after the earth has been deposited, as the weight of the earth will have compressed the brush.

The upper mud-cell rafts are built in a manner similar to the lower one, except that the top of the lower raft is used as the bottom of the next raft above.

The lower mud-cell raft is built to cover as nearly as practicable the entire upper surface of the fascine foundation. The second and third stories of mud-cell rafts are narrower. The dikes are built so that the outer end, usually about 150 ft. from the shore connection, will be 4 or 5 ft. above low-water mark, and the shore end either level with the bank or a few feet above high-water mark. The distance between the dikes is made as near 500 ft. as the condition of the bank will permit.

During a rise in the river, while sediment is being carried by the water, the dikes obstruct the flow, and as the velocity is reduced sand and mud are deposited in the hollow spaces of the fascines and mud-cell rafts. Sedimentation also takes place between the dikes, first on the up-stream side of the dike, near the river bank, and then on the down-stream side for a greater distance from the bank.

In several cases, notably dikes which were built first, considerable settlement occurred after the completion of the lower mud-cell raft, caused, no doubt, by the water which was deflected by the dike cutting under its end, or, perhaps, also by the weight of the dike forcing it down into a bed of quicksand.

Three dikes were in process of construction at a time, and work was continued on each until two stories of mud-cell rafts were completed, when the dike was laid by. Later, as required, in order to keep the top of the dike at the proper height, additional stories were put on. After the December flood receded, there were, fortunately, no dangerous rises until several of the dikes had been laid by, but several rises of from 5 to 10 ft. occurred before the completion of any of the dikes. This was of advantage, in that it tended to fill, at least, the lower portions of the dikes and to collect enough deposit around them to increase their stability and to add materially to their resistance to more serious floods. Work was begun in the middle of December, 1908, and the dikes were practically completed by the middle of April, 1909, but a small force was kept on the work until July in order to have an organization which could be readily enlarged if made necessary by the action of the spring rise.

The water in the river rose to an elevation of  $21\frac{1}{2}$  ft. above low-water mark during the latter part of May, and remained high for two weeks. At ordinary low stage, there is from 16 to 18 ft. of water in the deepest part of the channel. A number of dikes were submerged. None of the bank was lost, except at two places, and there the loss was inconsiderable. A slice of the bank, 6 ft. wide and 50 ft. long, caved off the day before the crest of the flood was reached, after which no

trouble was experienced. At another point the bank began falling off on the day the water reached its highest stage. A total width of only 8 or 10 ft. was lost, but several solid fascines were launched before the caving stopped. While the river was rising a strong current was deflected around the end of each dike, so that it struck the outer half of the next dike down stream. A weaker current turned up stream from the dike and flowed backward, usually close to the shore, until it struck the next dike up stream, from which it was deflected and flowed down stream—until its energy was spent—along a path about midway between the shore and the line along which the current had previously gone down stream. At the flood stage the same action took place in a general way. Sometimes the back current flowed up stream only half way to the next dike before it was deflected down stream by a direct current, and more violent eddies were produced where the strong down-stream currents, which passed over and around the end of a dike, collided with the quieter water below the dike and nearer the shore. The eddies which were produced below two of the dikes were so close to the shore—within 30 or 40 ft.—that their energy was not spent before they impinged on the slope of the bank with sufficient force to bore holes in it. It is the writer's opinion that damage of this kind by future floods could be prevented by raising the half of the dike next to the shore, and this has since been done on three dikes.

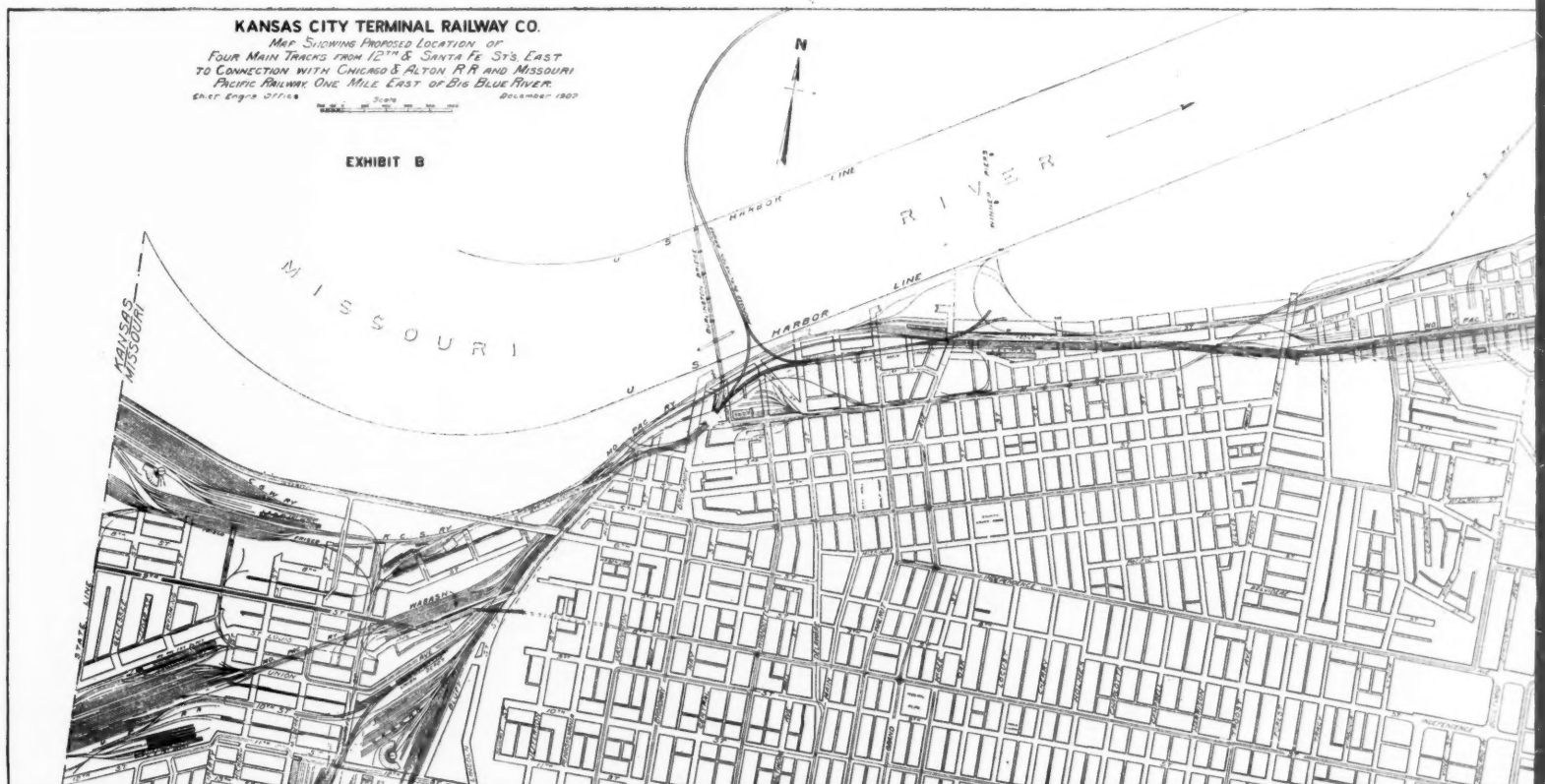
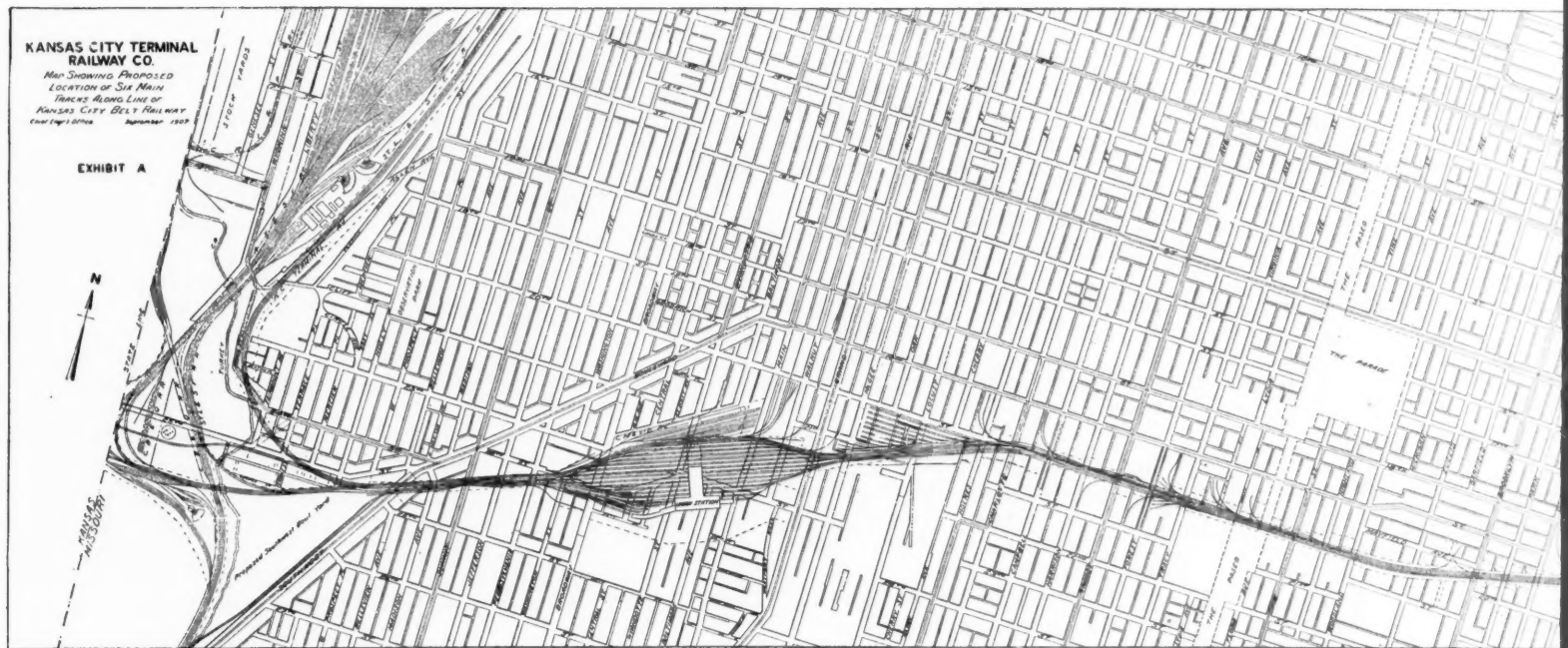
Since the water has returned to low stage, sand-bars have appeared along the shore between the dikes. These bars have a width, transverse to the stream, of from 20 to 40 ft., and elevations of from 2 to 5 ft. above low-water mark. The cells in the dikes are filled to the same elevation, the deposit extending 5 or 6 ft. outside the dike, except along the outer end and along the outer half of the dike on the up-stream side. In nearly every case the deepest water in the river is just beyond the outer end of the dike.

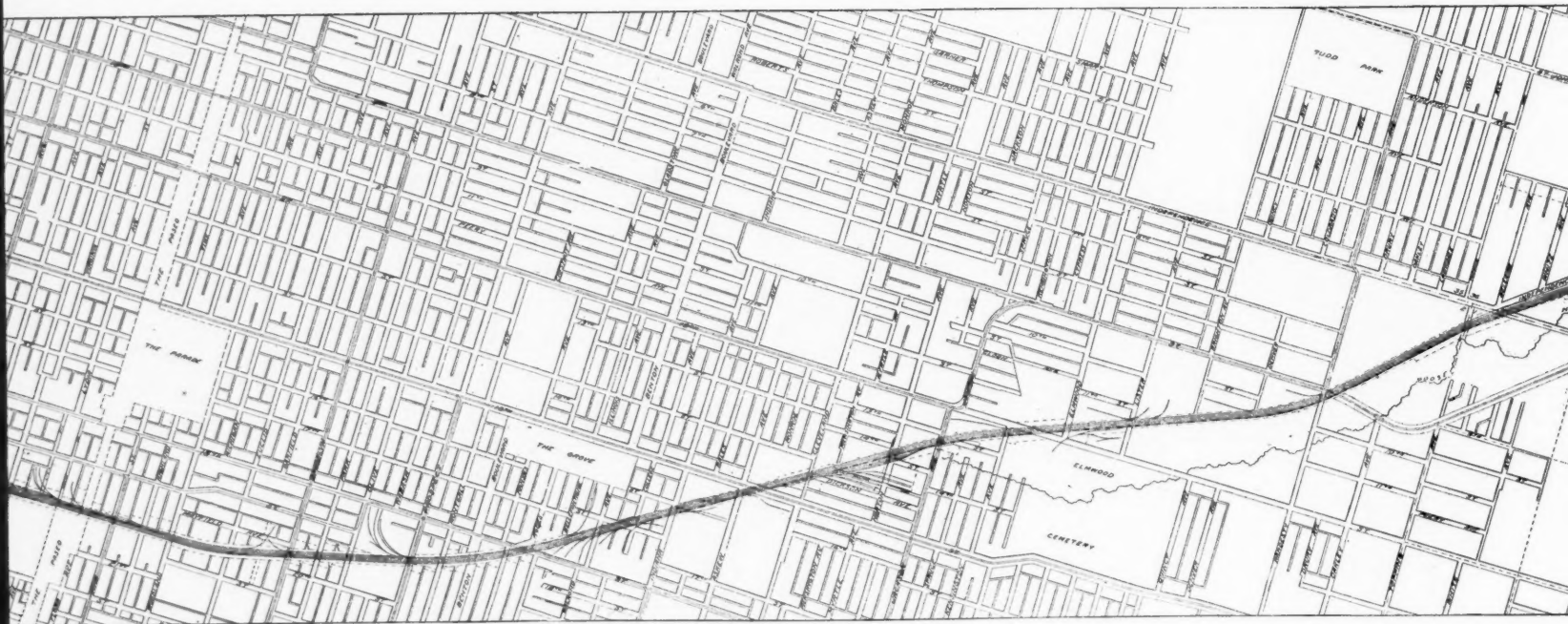
The principal damage sustained by the dikes was to their looks. The outer ends of the upper rafts of two dikes were washed out of line, so that they hung over the down-stream sides of the next lower rafts, but the upper rafts were not broken apart; and the outer ends of two dikes were twisted out of shape, but were not detached. Nearly all the dikes settled a little at their outer ends, but none of this damage is sufficient to impair their efficiency. A portion of the upper raft of one dike, between 70 and 100 ft. from the shore connection, was torn loose and washed away and will have to be replaced.

Willows, up to 2 in. in diameter at the butts, are most desirable for constructing the dikes, but, on account of the lack of this kind of material within easy reach of the work, it was necessary to use also pine and hardwood brush. Willows were cut and tied in bundles, 10 or 12 in. in diameter, at Kansas City, and shipped to the site of the work. This supply was limited and, before the work was completed, was shut off by water in the Missouri river bottoms. The pine and hardwood brush could not be tied in bundles and was more expensive and inconvenient to handle than willow, besides making a less satisfactory grade of work. A total of 18,000 cords of brush and poles (loose measurement, except in willows) was used in the permanent work, and the average cost was \$1.55 per cord on board cars at the site of the work. Less than one-sixth of the total amount of brush was willows. No charges were assessed for transportation of material over the company's line.

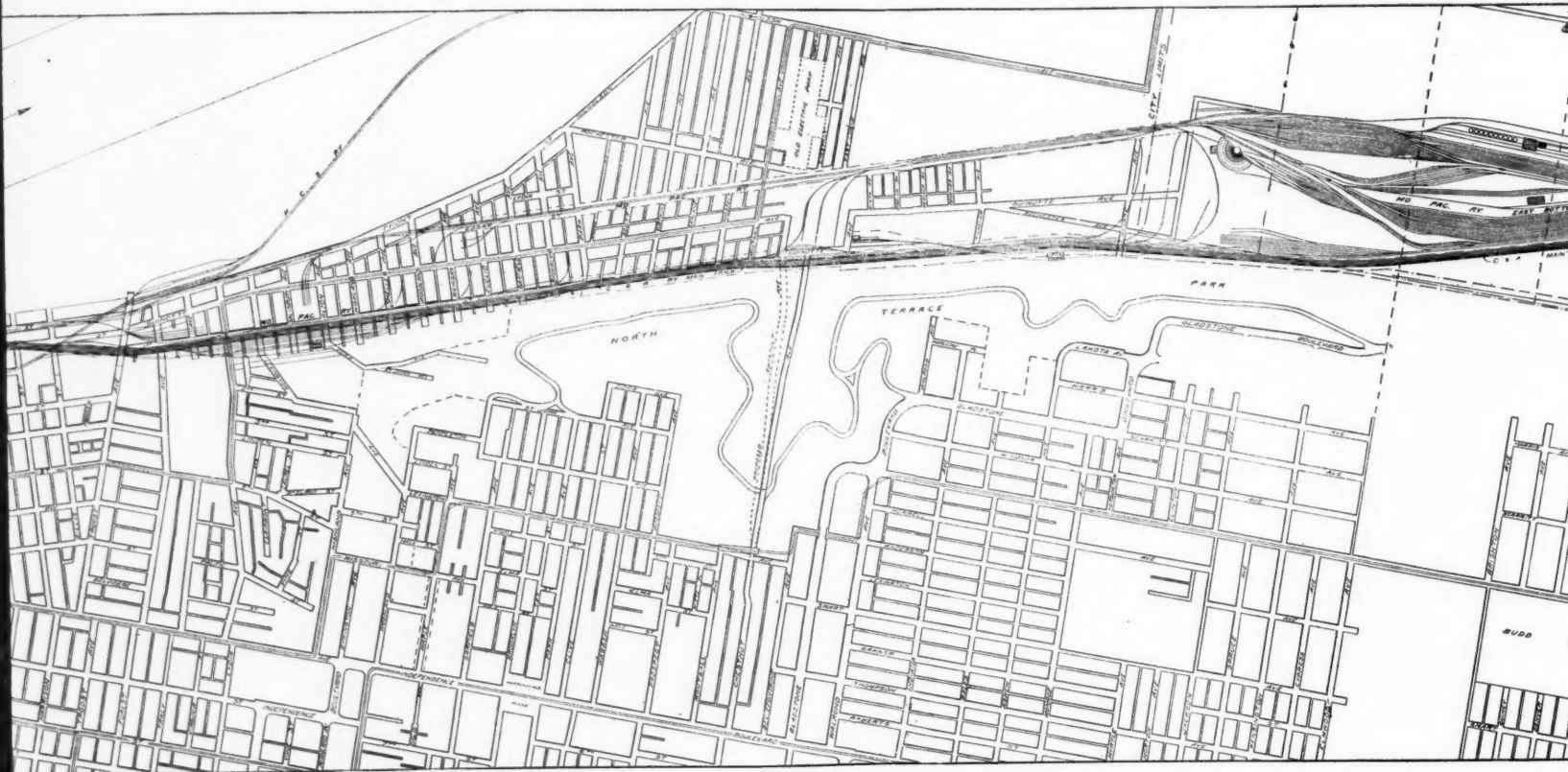
The cost of constructing the dikes amounts to \$8.15 per ft. of bank protected. The economy of this system of work will depend largely on the cost of maintaining the dikes until such time as they will be no longer required for the protection of the bank, which cost is as yet unknown. The portions which are below water will last a long time, as far as decay is concerned, but the portions which are above the sediment collected by the dikes will have a much shorter life.







Location of Six Main Tracks Along Line of Kansas City Belt Railway.

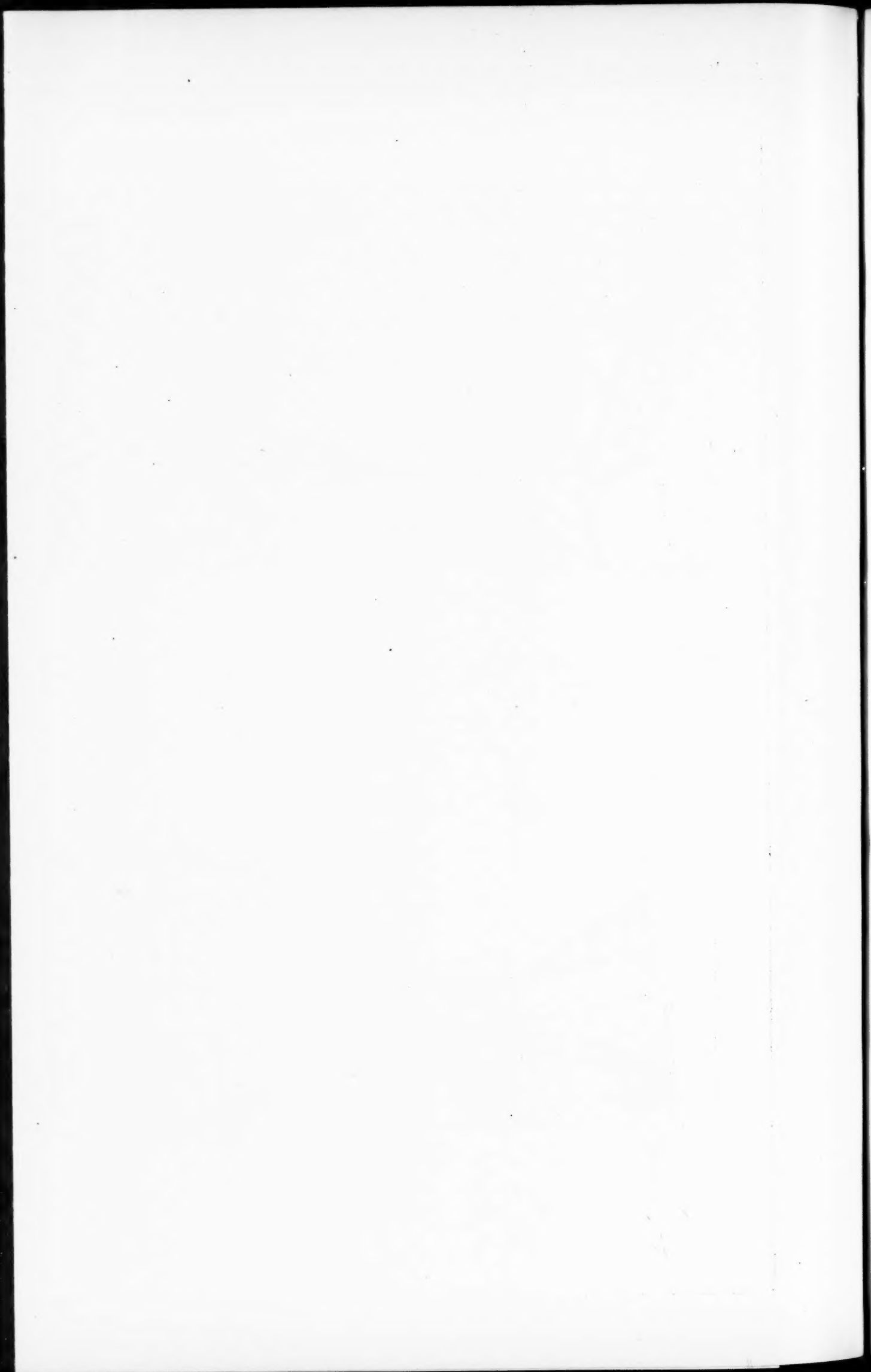


Location of Four Main Tracks from Santa Fe Street East.

KANSAS CITY TERMINAL PLANS.









# PLANS AND ORDINANCE FOR NEW UNION STATION AND TERMINALS AT KANSAS CITY, MO.

(WITH AN INSET.)

An ordinance providing for the building by the Kansas City Terminal Railway Company of extensive freight and passenger terminals and a new union passenger station at Kansas City, Mo., has been passed by the city council, accepted by the company and ratified by the voters of the city at a special election. It is, therefore, a matter of but a short time until work on this important piece of construction will begin.

The original scheme of the railways, as presented to the city council in a proposed ordinance in June, 1906, was to build a station and terminals to cost not more than \$29,000,000. The financial panic and subsequent business depression caused the directors of the Kansas City Terminal Railway greatly to curtail their plans. The expenditures authorized were reduced in January, 1908, to \$15,000,000. With the return of conditions approaching normal the authorized expenditures have been increased, and the amount it is now proposed to lay out is \$21,000,000. Of this \$3,000,000 will go into the passenger station, which will be at Twenty-third and Main streets.

The amounts spent by the Terminal Railway, mainly for the benefit of the people of the city, will be large. For a park on the ground in front of the station \$500,000 will be expended; for sewer improvements, \$550,000, and for viaducts and subways, \$5,000,000; a total of \$6,050,000.

Agreement between the company and the council and officials of the city regarding the provisions of the ordinance was reached only after protracted negotiations, and as finally adopted the document imposes requirements, restrictions and burdens on the Terminal Company and the roads that control it that are novel.

Ten roads are in the Terminal Company, each owning one-tenth of its stock. They are the Chicago, Rock Island & Pacific, the Atchison, Topeka & Santa Fe, the Wabash, the Missouri Pacific, the Union Pacific, the Chicago, Milwaukee & St. Paul, the St. Louis & San Francisco, the Chicago, Burlington & Quincy, the Chicago & Alton and the Missouri, Kansas & Texas. The Kansas City Southern and its present tenants, the Chicago Great Western, the St. Joseph & Grand Island and the Quincy, Omaha & Kansas City, also will probably use the passenger station and terminals from the start. The Terminal Railway, with the express approval of the city, has acquired control of the present Kansas City Union Depot Company and of the Kansas City Belt Railway Company.

Briefly, it proposes, besides erecting the new passenger station, to build at once on the north side of the city two new tracks for freight trains entering and leaving the city, which ultimately will be increased to four; to build at once on the west side of the city two new tracks from Ninth street south, to afford the Burlington entrance to the new passenger station; one track from Ninth street north, and to lease one track from Ninth street north, and ultimately to build four tracks on the west side from Broadway to Twenty-fifth street, and to build at once to a Kansas City (Kan.) connection, for the use of roads entering from that city—the Union Pacific, the Rock Island, the Missouri Pacific and the Chicago Great Western—two surface tracks, and later to build two high-line tracks from Kansas City, Kan., on a viaduct. It will build at once two more tracks for passenger service along the entire length of the present right-of-way of the Kansas City Belt Railway, which reaches from the extreme eastern part of the city to the Missouri-Kansas line, making four tracks here in all. It will be noted that under this plan freight and passenger business are completely segregated. The present tracks of the Belt Railway are on a 1.5 per cent. grade. The two new tracks will be on a 1.25 per cent. grade, and the old tracks will be reduced to this. The Belt Railway crosses forty-two streets, of which thirty are now protected

by overhead or depressed crossings. All the remaining grade crossings will be eliminated.

The Terminal Company will begin at once proceedings for vacations of public highways, streets, alleys, etc., as may be necessary, the ordinance requiring that the necessary petitions and the consents in writing of the persons or corporations owning three-fourths of the fronting property thus affected shall be on file with the city clerk within ninety days after the final acceptance in writing of the ordinance by the Terminal Railway, following the ratification of the ordinance by the voters. The city agrees to pass and cause to be approved and made effective the vacation ordinances so requested, within a reasonable time. If it fail to do so within sixteen months of the time of the written acceptance of the ordinance the Terminal Railway shall waive such failure, both it and the city shall be relieved of all obligations imposed by the ordinance, and the latter become null and void. If the Terminal Company fails to file any petitions and consents within the time specified the ordinance becomes null and void. But if the company is unable to file all of the petitions and consents within the time specified the city agrees to pass the necessary ordinance vacating the same, provided the petitions and consents are filed and all other necessary legal steps taken within three years from the acceptance of the ordinance.

In section 5 of the ordinance the right is granted to the Kansas City Terminal Railway for a term of 200 years to construct, reconstruct, operate and maintain six main tracks of railway (Exhibit A herewith), including two already existing, together with such switches, side tracks, team tracks, connections, crossovers and other appurtenances as may be necessary or desirable, over and across the streets, alleys and public places of the city as they now exist or may hereafter exist relative to the right-of-way as it now exists or may hereafter be widened, not to exceed 150 ft. in width, with certain exceptions which are noted in detail. This section likewise makes provision for the construction of the four main tracks from Twelfth and Santa Fe streets east to connection with the Chicago & Alton and the Missouri Pacific railways a mile east of the Blue river (Exhibit B); and for the four tracks along the West Bluff to connection with the Chicago, Burlington & Quincy near its bridge over the Missouri river (Exhibit C). The minimum grades of tracks over subways are established in each instance. Two of the six tracks first mentioned, in addition to the two existing, are required to be built by the time the station is ready for use, also two of the four main tracks second mentioned; but in lieu of one of the latter the company may acquire trackage rights equivalent thereto.

The ordinance grants to the Terminal Railway the right to alter or rebuild, at its own expense, nineteen viaducts now existing over its tracks, and to build a number of new viaducts as provided in the ordinance. The ordinance prescribes that these viaducts shall have the substructure of stone, concrete or concrete and steel, and the superstructure of steel or steel and concrete, with the roadways and sidewalks carried on brick or concrete arches or on reinforced concrete slabs. The approaches are to be steel, stone, concrete, or steel and concrete, with earth where retaining walls are used. The Terminal Railway agrees to maintain and keep in good repair during the life of the franchise all of the viaducts provided for therein, with two or three exceptions. Fifteen subways are also provided for in the ordinance, to be built and maintained at the company's expense. Suitable provision is made for future viaducts and subways.

In consideration of compliance by the Terminal Railway with the provisions of the ordinance regarding viaducts and subways the city agrees that no grade crossings except those now in existence shall be built at any time during the life of the franchise. The city agrees that before granting to any railway the right or privilege of building or operating a railway across streets, alleys, etc., under any of the viaducts

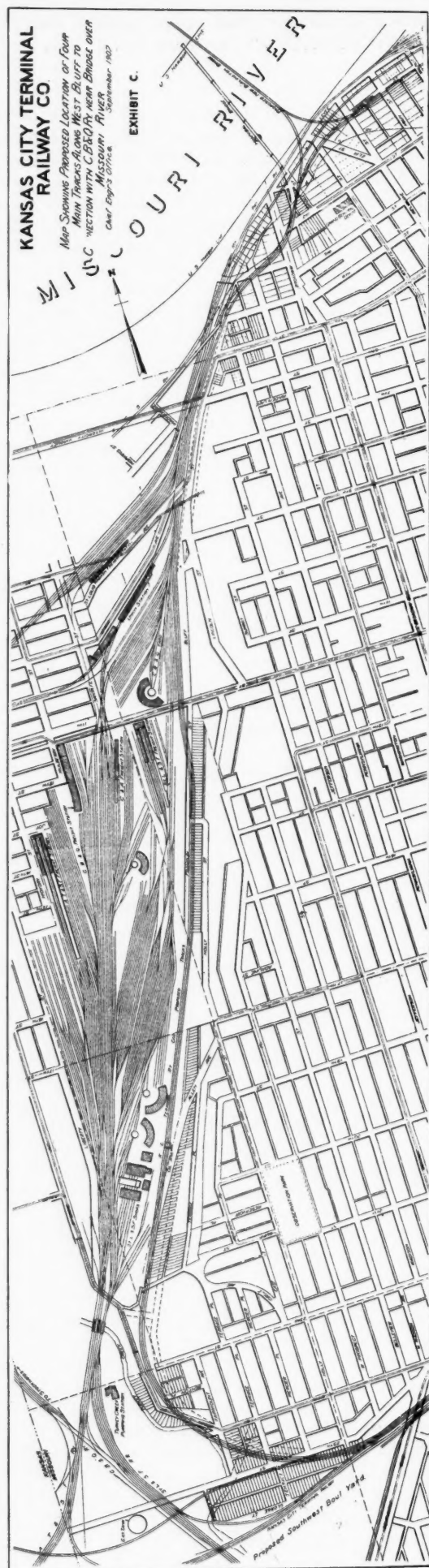
mentioned, such company shall agree to pay to the Terminal Railway such proportion of the total net cost of such viaduct and approaches, less contributions, if any, made by any street railway, as the number of its tracks from time to time bears to the total number of tracks under the viaduct, and contribution to the maintenance of the viaduct and approaches shall be made in the same proportion. The city further agrees that any street car company not already operating over any of the viaducts or subways provided for in the ordinance shall, before being permitted to do so, be required to pay to the Terminal Railway one-half the cost of such viaduct or viaducts and approaches, including land damages, and also one-half the cost of maintenance. This provision is not, however, to apply to or in any way affect contracts already in existence between the Terminal Railway and the several traction companies. Also, it shall not apply to suburban railways which the city may permit or require to build their tracks over any of the viaducts or through any of the subways provided for, but they will be required to pay a sum fixed by court for the right. All plans and specifications for the new viaducts, subways, etc., mentioned above must be furnished to the Board of Public Works within twelve months of the date when vacations are made, and, having been approved or modified by the board at the expense of the company, work is to be begun within twelve months of the date of approval and completed within thirty-six months. All other viaducts, subways and approaches, with one exception, are to be completed within a year of the date of approval.

Section 12 of the ordinance provides that in consideration of the passage of the ordinance the Terminal Railway will build at some point south of Twentieth street, between Broadway and Main, a union passenger station, the east end of which shall be approximately 112 ft. west of the west line of Main street, and which, excluding ground and tracks, shall cost not less than \$2,800,000, and contain facilities for handling passengers and trains for all lines of railway operating into the city, with provision for increasing these facilities to meet future needs. The station shall be completed and ready for service within four years from the date when the vacations are made. The station is to be open to the use of all railways, present and future, upon their compliance with the provisions of the ordinance relative to the operation of their trains, compensation, rules, etc. Any company entitled to use the station shall also have the right to cross over the tracks of the Terminal Railway as may be reasonably necessary to secure entrance to the station. Similar provision is made for the use of the four tracks on the north side (Exhibit B) for the freight trains of all roads.

The maintenance of freight sub-stations is an important provision of the ordinance. The Terminal Railway agrees to build and maintain five such stations for the receipt and delivery of less-than-carload freight and, with one exception, have them ready for use as soon as the union station. One of these sub-stations is to be on the north side between the intersections of the company's tracks with Grand and Troost avenues; one on the south side on the company's tracks between Grand avenue and Holmes street; one near Fifteenth street and Askew avenue; one at or near Sheffield; and the fifth in the East Bottoms at a point to be designated by the city council by ordinance. This fifth sub-station cannot be required to be built in less than five years, and cannot be required to be built at all unless the business in the tributary territory gets big enough to make it needed.

The Terminal Railway agrees to buy and transfer to the city within four years four blocks of ground south of and fronting the station, between the station and Twenty-fifth street, for the park already alluded to. This park is to be improved and maintained forever by the city.

A very interesting and important provision of the ordinance is that relating to the absorption of switching charges by the various railways entering the city. At present the roads en-



Location of Four Main Tracks Along West Bluff, Kansas City.



tering Kansas City absorb switching charges on competitive commodities and on commodities handled to and from competitive points. It has also been the practice for freight charges to sub-stations to be made the same as the rates to the main freight stations of the various roads. The city authorities sought to bind the Terminal Railway and the roads that own it to absorb switching charges perpetually. The ordinance, as finally agreed to, stipulates that its provisions shall not "in any manner interfere with the maintenance of said custom and practice." But should any one of the constituent companies of the Kansas City Terminal Railway at any future time desire to depart from present customs and practices the city may by ordinance require the Terminal Railway to convey, for the consideration of \$1, the right to such constituent company or companies, to use all of the freight tracks of the Terminal Railway.

The company agrees that during the life of its franchise it will not buy, own, operate, control, or in any wise, directly or indirectly, acquire by deed, contract, stock ownership or in any other manner, whether specifically enumerated in the ordinance or not, any ownership or control or all or any part of any now existing terminals of any other railway in Kansas City, Mo., except such as may be authorized in the ordinance relative to the old Kansas City Belt Railway. It agrees not to discriminate unjustly in favor of any interest west of the state line (in Kansas) to the injury of any shippers, enterprise or interest east of the state line (in Missouri). In the matter of switching charges it will under no circumstances subject Kansas City, or any person, firm or corporation located or doing business therein or shipping thereto, to any undue or unreasonable prejudice or disadvantage with its or their competitors in other competing cities or localities. Continuing, the ordinance provides:

"The charges so to be made may be sufficient to afford a fair and reasonable return upon the reasonable value of the property engaged in the service, which shall include such sums as the Kansas City Terminal Railway Company may have fairly and reasonably expended in its organization and in complying with the provisions of this ordinance; but in fixing such charges the value of this grant, or the amount of stock or bonds of the grantee, shall not be considered; provided, however, that if in any proceeding before any court or tribunal passing upon the validity of a charge, any portion of the property or expenditures above named shall be by such court or tribunal excluded, then, in such proceeding, the grant hereby made may be considered as equal in value to the properties or expenditures so excluded."

To facilitate the determination of the amount and valuation of the property used by the company and the amount spent in its organization, it agrees to file with the city comptroller, when the grant becomes effective, a sworn statement of its expenditures for organization, a description of its real estate and the location of all tracks taken over, the amount spent in taking over the properties of the Kansas City Belt Railway and the amount of incumbrance on them, the amounts expended for other properties, etc. It must file a similar statement on January 1 of each year, and the city shall at all times have the right to examine the company's books.

The city originally sought to bind the company to pay all damages caused by the construction of viaducts, subways, etc., but the company refused to assume an unknown and unascertainable liability. The ordinance as finally agreed to fixes the land damages along the six passenger tracks and connecting tracks at \$316,318.68. The company will pay this amount, plus 10 per cent., into the city treasury, and the city is to settle with claimants for damages. The probable damages caused by the track building on the north side could not be ascertained, and it was therefore agreed that a commission consisting of six resident property owners of Kansas City should be appointed by one of the circuit judges of the county on the application of either the company or the city to fix the

damages a reasonable time before each viaduct was built, and that the company should pay into the city treasury the amount, plus 10 per cent., of the award of this commission. By agreement the company will pay into the city treasury \$28,421.80 to cover the damages caused by the building of the viaduct and approaches at Broadway.

Plans for the passenger station have been made by Jarvis Hunt, of Chicago, but no definite action has been taken regarding them. The present scheme is to have twenty-two standing tracks and four open-thoroughfare tracks. The station will be used by an average of 235 trains a day.

The negotiations for the ordinance were conducted for the railways mainly by H. L. Harmon, president of the Kansas City Terminal Railway Company. To his integrity, tenacity and inexhaustible patience is largely due the fact that there was at last secured by honorable means an ordinance whose provisions are far less burdensome to the railways than those which were long stubbornly contended for by the officials of the city.

### ACCIDENT BULLETIN NO. 32.

The Interstate Commerce Commission has issued Accident Bulletin No. 32, giving a summary in the usual form of the railway accidents in the United States during the three months ending June 30, 1909. The number of persons killed in train accidents was 99 and of injured 2,116. Accidents of other kinds bring the total number of casualties up to 15,895 (588 killed and 15,307 injured). These reports deal only with employees on duty and passengers. The term "passengers" includes postal clerks, express messengers, employees on Pullman cars, newsboys, live-stock tenders and men in charge of freight.

TABLE NO. 1.—Casualties to Persons.

	Passengers		Employees		Tot'l persons reported	
	Kil'd.	Inj'd.	Kil'd.	Inj'd.	Kil'd.	Inj'd.
Collisions .....	1	355	23	378	24	733
Derailments .....	6	715	64	418	70	1,133
Miscellaneous train accidents....	..	16	5	234	5	250
Total train accidents .....	7	1,086	92	1,030	99	2,116
Coupling or uncoupling .....	..	..	34	566	34	566
Other work abt trains or switches ..	..	..	31	3,333	31	3,333
In contact with bridges, etc.....	..	6	18	286	18	292
Falling from cars or engines or while getting on or off...	27	787	100	2,232	127	3,019
Other causes .....	10	868	269	5,114	279	5,982
Total, other than train ac'd'ts.	37	1,661	452	11,530	489	13,191
Total, all classes .....	44	2,747	544	12,560	588	15,307

In the total number of passengers and employees killed in train accidents (mainly collisions and derailments) the present record (99) is the lowest that the quarterly bulletins have ever shown. The previous low records were Bulletin 28, one year ago (112), and Bulletin 27 (125). Aside from this feature, the present bulletin shows no marked changes in totals of casualties. In Bulletin No. 31 the number of passengers killed in train accidents (37) was swelled by a single collision killing 20. The revival of business, tending to increase the liability to accident, continued during the quarter now under review; but, as in the quarter ending with June in previous years, conditions favorable to freedom from accident appear to have been more pronounced than at other times of the year. Other comparisons may be made from the table next following.

TABLE NO. 1A.—Comparisons of Principal Items with Last Bulletin and with One Year Back.

	Bulletins		
	No. 32.	No. 31.	No. 28.
1. Passengers killed in train accidents.....	7	37	13
2. Passengers killed, all causes.....	44	80	57
3. Employees killed in train accidents.....	92	140	99
4. Employees killed in coupling .....	34	44	30
5. Employees killed, all causes.....	544	583	534
6. Total passengers and employees killed...	588	663	591

The total number of collisions and derailments in the quar-

ter now under review was 2,100, as shown in the table below:

TABLE No. 2.—Collisions and Derailments.

	No.	Loss.	Persons—	
			Killed.	Injured.
Collisions, rear .....	145	\$164,214	7	211
"    butting .....	77	103,689	7	184
"    train separating .....	71	22,858	1	29
"    miscellaneous .....	524	220,073	9	309
Total .....	817	\$510,834	24	733
Derailments due to:				
Defects of roadway, etc. ....	229	\$177,109	7	284
Defects due to equipment .....	543	470,993	5	160
Negligence .....	64	36,633	3	59
Unforeseen obstruction of track	95	138,755	22	150
Malicious obstruction .....	9	14,096	1	20
Miscellaneous causes. ....	343	355,222	29	436
Total .....	1,283	\$1,192,808	67	1,109
Total collisions and derailments	2,100	\$1,703,642	91	1,842
Total for same quarter of 1908....	2,130	1,617,398	104	2,008
Total for same quarter of 1907....	3,777	3,232,673	227	3,685

Following is the usual list of class A train accidents—all in which the damage is reported at \$10,000 or over, and the notable cases.

TABLE No. 2A.—Causes of Thirty-six Prominent Train Accidents.

[NOTE.—R. stands for rear collision; B., butting collision; M., miscellaneous collisions; D., derailment; P., passenger train; F., freight and miscellaneous trains.]

No.	Class.	Kind of train.	Killed.	Injured.	Damage to engines, cars & roadway.	Reference to record.	Cause.
1	R.	F. & F.	1	1	\$2,000	3	Train approached yard not under control. One drover in caboose killed.
2	M.	F. & F.	0	0	2,000	59	False clear signal at interlocking; due to error of repairman. (See note in text.)
3	B.	F. & F.	1	2	2,001	31	Collision of northbound freight and southbound empty engine; men in charge of empty engine misread order. Order read "four 4 k a. m." They read it 4:15 a. m.
4	B.	F. & F.	0	1	2,100	6	Signalman neglected to deliver order. (See note in text.)
5	B.	F. & F.	0	3	2,365	7	Conductor and engineman misread order. (See note in text.)
6	M.	P. & F.	0	0	2,450	33	Failure of automatic block signal. (See note in text.)
7	B.	P. & F.	0	6	3,250	55	Operator failed to deliver meeting order. (See note in text.)
8	B.	P. & F.	1	22	3,635	56	Schedule of superior train overlooked. (See note in text.)
9	B.	F. & F.	0	3	4,968	32	Mistake in despatcher's order. (See note in text.)
10	B.	P. & P.	1	57	5,800	54	Operator made mistake in name of meeting point in writing despatcher's order.
11	M.	F. & F.	1	2	7,000	9	Failure to flag; train at rest; flagman killed in caboose.
12	B.	P. & P.	1	13	7,000	30	Error of despatcher. (See note in text.)
13	M.	F.	0	0	10,850	57	Cars ran uncontrolled from siding to main line, 11 p. m.; due to rough handling of cars in yard.
14	R.	F. & F.	0	1	13,500	2	Failure of air brakes; air leaked both in reservoir and in train line; no cause discovered; engineman had not watched gages
Total.....					6 111	\$68,919	
Derailments.							
1	D.	P.	1	3	.....	19	Automobile, running on track, derailed by running over a dog; one guest killed.
2	D.	F.	1	0	\$375	34	Undiscovered; one passenger jumped off caboose and was killed.
3	D.	P.	0	4	2,100	36	Train carrying miners; engine running tender first; tender was first vehicle to run off the track; cause probably oscillation.
4	D.	F.	0	0	3,300	25	Undiscovered; tender was first vehicle to run off the track.
5	D.	P.	3	46	3,350	50	Engineman (who was killed) disregarded slow orders and flag.
6	D.	P.	0	27	3,937	40	Steel girder bridge failed; undermined by flood.
7	D.	P.	0	13	4,800	64	Soft track due to heavy rains; speed 45 miles an hour.
8	D.	P.	0	42	5,500	35	Undiscovered; possibly oscillation of tender due to succession of low joints.
9	D.	P.	2	1	6,000	80	Undiscovered.
10	D.	F.	0	0	9,040	44	Breakage of driver brakehanger strap.
11	D.	P.	0	13	9,542	21	Switch maliciously misplaced.

No.	Class.	Kind of train.	Killed.	Injured.	Damage to engines, cars & roadway.	Reference to record.	Cause.
12	D.	P.	0	19	9,800	53	Undiscovered; speed 40 miles an hour on good track; believed that tender was first vehicle to run off the track.
13	D.	P.	2	23	10,000	22	Excessive speed on 10-degree curve; engineman killed.
14	D.	P.	2	3	10,800	26	Undiscovered, but believed to be excessive speed over frogs and switches in yard; engineman, of 21 years' experience, was killed.
15	D.	F.	0	0	11,000	15	Undiscovered; believed to be excessive speed or broken brake-shoe.
16	D.	F.	0	0	11,877	14	Excessive speed.
17	D.	P.	1	13	12,000	37	Passenger train derailed by cars which had fallen out of freight train on adjacent track; freight had been derailed by broken wheel.
18	D.	F.	0	8	13,000	75	Landslide; train was moving 5 miles an hour on bank 50 ft. high; bank with train slid into river.
19	D.	P.	1	13	14,323	48	Washout. (See note in text.)
20	D.	F.	0	0	14,751	41	Broken axle.
21	D.	F.	1	4	20,800	77	Runaway on 3.3 per cent. grade; bad management of air brakes; engineman lacked experience on steep grades.
22	D.	F.	0	0	31,700	66	Broken truck. Speed 40 miles an hour or higher; 12 cars and contents destroyed by fire.
Total.....					14 232	\$207,995	
Grand total.					20 343	\$276,914	

Collision No. 2, due to lack of care on the part of a signal repairman, occurred at 11 p. m. A contact spring having been broken in an electric interlocking machine, the day repairman was called out at this hour to correct the fault. In order to put in a new spring he had to loosen certain wires, and one of these wires accidentally came in contact with another in such a way as to complete the circuit which energized the motor to turn a switch; and this occurred just as a locomotive was approaching the switch. Being turned on to the wrong track, the locomotive collided with another which was passing at that moment.

Collision No. 4 was due to the neglect of a block signalman to display a stop signal. This signalman, at B, on receiving word from A that engine No. 5 was approaching called the signalman at C, and having received proper authority from him displayed his signal in the position to permit engine No. 5 to proceed to C. Immediately after doing this he received from the despatcher an order to be delivered to engine No. 5. In receiving this order he gave to the despatcher the regulation symbol indicating that he had displayed his signal in the stop position to stop engine No. 5; but in point of fact he had not displayed it, and did not. In a case of this kind he should also have displayed a red flag in addition to the fixed signal, but this also was neglected. The collision was due to the non-delivery of the order. This signalman was 34 years old and had had a number of years experience as a telegrapher, but he had been in the service of this company at this place only one day.

Collision No. 5 was a butting collision between freight trains, due to misreading of a despatcher's order by the conductor and engineman of one of the trains. This order was to the effect that No. 52 was annulled from E to D; but in reading the order these men read "53" instead of "52." The figure "5" and the figure "2" were run together in such shape that it was possible to take the "2" for a "3." Aside from any question as to the legibility of the writing, the wording of the order was such that it should have put these men on their guard, for train No. 53 was running in the opposite direction from train No. 52. In other words, to say that No. 53 was annulled from E to D was a contradiction in terms, as No. 53 was running from D to E, and odd numbers were used exclusively for trains running in that direction. The number of the train was not written out in words.



Neither of the men had read the order aloud to anyone, nor had either of them heard it read aloud.

Collision No. 6 was due to neglect in flagging, coincident with the failure of an automatic block-signal mechanism, which allowed the block signal to indicate clear notwithstanding that the section was occupied by cars.

The collision occurred at about 2 a.m. An eastbound freight train, entering a sidetrack about 1:10 a. m., to make way for a passenger train, which was westbound, was so long that when the engine stopped at the east end of the sidetrack, clear of the main track, the five rear cars of the freight train still fouled the main line. The rear brakeman signaled to the engineman to move farther ahead, and he did move a short distance; but still not enough to clear the main track at the rear. The rear brakeman then went back to signal any train that might be following. The conductor assumed that flagging against the train from the east would be attended to by the brakeman at the front end of the train, but this was not done. The automatic block signal, fixed near the east end of the siding, giving indications for westbound movements, indicated all clear, and the passenger train therefore proceeded past the signal at about 35 miles an hour, and the engineman did not see the obstructing cars until he was within 400 ft. of them.

The failure of the block signal to indicate stop was due to defective insulation on a binding post in the electric motor, the insulating material having become carbonized. With this insulation gone a short-circuit was caused which energized the motor, and thus the signal was held in the clear position notwithstanding that the track relay was open.

Collision No. 7, due to forgetfulness of a telegraph operator, occurred at 6 p.m. The operator had received an order for a certain train, and had set his signal in the proper position to stop the train. The train, however, did not arrive for about 20 minutes, and when it approached the operator changed the signal to indicate "proceed," in entire forgetfulness of the presence of the order. Of this forgetfulness the operator can give no explanation. In this case the office was provided with a "telltale device" intended to prevent just such forgetfulness, but this the operator did not use. The device consists of a metal disk, having the appearance of a flag, which, when there is an order on hand to be delivered, is fastened across the rope which holds the signal in the stop position. The disk is colored red and is intended as a reminder to the operator in case he shall attempt to pull the signal to the proceed position without thinking of the order. When there are no orders on hand the disk is turned to a different position and shows white instead of red.

Collision No. 8, between an eastbound freight train and a westbound passenger train, was due to a mistake in reading the time-table. The passenger train had just left the station at M, when it was met by the freight, which should have reached the station and cleared the main track before 8 p.m. The passenger train was about one and one-half minutes late, and the collision occurred at 8:03. The passenger train was moving slowly and the engineman succeeded in stopping his train, but the freight was running about 30 miles an hour, a curve in the line obscuring the view. The engineman of the freight testified that he read the time of the passenger train at that station as 8:10 instead of 8. The conductor makes the same statement. These men, however, did not compare their readings; one of them claimed to have examined the table two stations back and the other five stations back. The brakeman on the forward end of the freight claimed to have forgotten all about the passenger train; the brakeman at the rear end says that he heard the conductor say that the passenger train was due at M at 8:10.

Collision No. 9 was a butting collision of freight trains caused by an error in issuing an order from the dispatcher's office. At the time the dispatcher began the preparation of

the order for the meeting of these trains, westbound extra No. 9 was proceeding from A to B, with orders giving it the right of road to B and no farther. Eastbound extra No. 7 was at B without orders to proceed farther. The dispatcher in issuing his order intended to provide that the two trains should meet at B, but in some manner, which is reported as unexplainable, he named A instead of B. The order was sent only to B. It was repeated by the operator there, but even after the repetition the dispatcher did not discover his error. He had not written out the order before transmitting it. Extra No. 7, on receiving the order, started eastward and met extra No. 9 after proceeding a short distance. This dispatcher had been employed on this road about five years and on other roads 11 years. His record up to the time of this accident was absolutely clear.

Collision No. 12 was due to an error on the part of the train dispatcher in issuing meeting orders, and it occurred between the switches at the appointed meeting station. The operators who delivered the meeting orders to the trains were also held responsible, as they should have detected the dispatcher's error. The dispatcher sent an order to the eastbound train at B to run to T, the next telegraph station, "except hold main line and meet" the westbound at D, which is an intermediate non-telegraph station. He then sent an order to the westbound at T to run to B "except hold main line and meet" the eastbound at D. The dispatcher's error was in directing both trains to hold the main line, his intention being to require the westbound to enter the side track. The operators at B and T are required to control the movements of trains between these stations by the telegraph block system, and in cases like this, where trains are to meet at the intermediate non-telegraph station, to give suitable directions as to which train shall take the siding and which shall continue on the main line, doing this in accordance with the instructions in the dispatcher's orders, which go through the station operators' hands. It appears that both operators simply copied the dispatcher's wording without noting the inconsistency of the two orders. The accident happened at 5 a.m., and all three of these men had been on duty about five hours. The operator at T had been in the service on that division four years, and the operator at B seven years. The dispatcher had been in the service on that division about eight months and had had several years' experience as dispatcher, with good records, on other roads.

The collision occurred near the west switch. The westbound train had come to a stop before reaching the switch. The side track, however, is about 3,000 ft. long, and, under the rules, the eastbound train was not required to stop until it reached the east switch. Approaching from the west, it passed over a 6-deg. curve, around a bluff, and the engineman therefore had no opportunity to see the westbound train until he was close upon it, and his speed was estimated at 35 miles an hour.

Derailment No. 19 occurred at 5:35 a.m. and was due to the weakening of the roadbed by high water, but there was no water visible in the vicinity at the time of the derailment. It appears that the fault was due to a sudden rain which occurred about 11 o'clock the previous evening. At that hour the track foreman in charge of this section, with his men, was absent on another section, where he had been called to help repair damage due to a washout. There had never been any trouble from high water at this point before, and the officers of the road therefore justified the action which was taken in sending the track repairers to another section, as was done in this case. The engineman of this train was killed, and therefore the exact fact as to how the roadbed appeared from the approaching train cannot be ascertained.

A butting collision which occurred on June 19, on the Chicago, Lake Shore & South Bend Railway, causing the death of nine passengers and one employee, is not included in the

tables of this bulletin. This is an electric road, which failed to make a report of the accident as required by law.

## YEARLY TABLES.

This bulletin completes the publication of the accident records under the law of March 3, 1901, for eight years. Table A gives aggregates for the year ending June 30, 1909. The total number of casualties shown for the year, 2,791 killed and 63,920 injured, includes three passengers and five employees killed and 37 passengers and 61 employees injured which did not appear in the quarterly bulletins, the reports from which they are taken having been received after the bulletins were printed.

The salient facts of the records of casualties for the 12 months are shown in Table B. As regards employees, a grati-

TABLE B.—Casualties to Passengers and Employees.

	Year ending June 30,					
	1909.		1908.		1907.	
	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.
<b>Passengers:</b>						
In train accidents .....	131	5,865	165	7,430	410	9,070
Other causes .....	204	6,251	241	5,215	237	4,577
Total .....	335	12,116	406	12,645	647	13,557
<b>Employees:</b>						
In train accidents .....	520	4,877	642	6,818	1,011	8,924
In coupling accidents .....	161	2,353	239	3,121	302	3,958
Overhead obstructions, &c. ....	76	1,229	110	1,353	134	1,551
Falling from cars, etc. ....	481	10,259	668	11,735	790	12,555
Other causes .....	1,218	33,086	1,699	33,317	2,116	35,661
Total .....	2,456	51,804	3,358	56,344	4,353	62,689
Total both classes .....	2,791	63,920	3,764	68,989	5,000	76,286

Table C shows the totals of the two principal classes of

TABLE A.—Summary of Casualties to Persons, Year ending June 30, 1909.

[NOTE.—The italic letters in the margin refer to the corresponding totals for the last preceding year, printed below.]

	Passengers (a and b).		Persons carried under agreement or contract (b b).		Total (a, b, and b b).		Trainmen.		Trainmen in yards.		Yard train- men (switch- ing crews).		Other em- ployees.		Total em- ployees.		Total persons reported.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
a Collisions .....	72	2,716	22	317	94	3,033	145	1,266	39	467	20	284	44	345	248	2,362	342	5,395
b Derailments .....	30	2,450	7	267	37	2,717	171	996	11	128	14	125	31	199	227	1,448	204	4,165
c Miscellaneous train accidents, includ- ing locomotive boiler explosions .....		96		19		115	36	727	4	177	2	94	3	69	45	1,067	45	1,182
d Total train accidents .....	102	5,262	29	603	131	5,865	352	2,989	54	772	36	503	78	613	520	4,877	651	10,742
e Coupling or uncoupling .....							49	735	38	463	67	1,086	9	69	161	2,353	161	2,353
f While doing other work about trains or while attending switches .....							28	7,147	23	2,346	10	2,610	32	2,212	93	14,315	93	14,315
g Coming in contact with overhead bridges, structures at side of track, etc. ....	2	32		4	2	36	54	601	9	243	7	334	6	51	76	1,229	78	1,265
h Falling from cars or engines or while getting on or off .....	129	2,991	8	85	137	3,076	196	3,947	74	1,994	107	2,950	104	1,368	481	10,259	618	13,335
i Other causes .....	52	2,820	13	319	65	3,139	110	817	74	384	86	379	855	17,191	1,125	18,771	1,190	21,900
j Total (other than train acci- dents) .....	183	5,843	21	408	204	6,251	437	13,247	216	5,430	277	7,359	1,006	20,891	1,936	46,927	2,140	53,178
k Total (all classes) .....	285	11,105	50	1,011	335	12,116	789	16,236	270	6,202	313	7,862	1,084	21,504	2,456	51,804	2,791	63,920

## Totals for preceding year:

a	102	3,903	9	381	111	4,284	191	1,832	43	690	31	422	39	484	303	3,428	414	7,712
b	48	2,677	3	380	54	3,057	203	1,412	16	168	26	324	15	251	260	2,065	314	5,122
c	0	75	0	14	0	89	69	894	6	228	6	120	8	76	79	1,325	79	1,410
d	148	6,656	17	775	165	7,430	453	4,138	64	1,084	63	785	62	811	642	6,818	807	14,248
e							71	959	45	642	114	1,435	9	85	239	3,121	239	3,121
f							61	7,790	40	2,700	48	2,986	57	2,515	206	15,991	206	15,991
g	3	29	1	8	4	37	71	681	12	276	15	345	14	51	110	1,353	114	1,390
h	154	2,434	6	67	159	2,601	281	4,607	98	2,562	162	3,376	137	1,596	668	11,735	827	14,236
i	69	2,140	9	237	78	2,677	160	831	103	438	106	443	1,124	15,614	1,493	17,326	1,571	20,003
j	226	4,903	15	312	241	5,215	644	14,868	298	6,412	433	8,585	1,341	19,661	2,716	49,526	2,967	64,741
k	285	11,105	50	1,087	406	12,645	1,097	19,008	362	7,496	496	9,370	1,403	20,472	3,358	56,344	3,764	68,989

TABLE C.—Collisions and Derailments—Damage to Cars, Engines and Roadway; Years Ending June 30.

	1909.				1908.				1907.			
	Num- ber.	Loss.	Killed.	Injured.	Num- ber.	Loss.	Killed.	Injured.	Num- ber.	Loss.	Killed.	Injured.
Collisions, rear .....	859	\$933,375	83	1,556	1,397	\$1,298,044	88	1,742	1,957	\$2,003,509	233	2,423
Collisions, butting .....	485	874,729	159	1,878	795	1,473,618	210	3,143	1,065	1,935,505	327	3,616
Collisions, train separating .....	386	146,067	6	159	436	165,850	4	214	695	259,495	13	322
Collisions, miscellaneous .....	2,681	1,154,520	94	1,802	3,735	1,097,687	112	2,613	4,309	2,101,059	203	3,180
Total .....	4,411	3,108,691	342	5,395	6,363	4,635,199	414	7,712	8,026	6,299,568	776	9,541
Derailments due to defects of roadway, etc. ....	991	708,658	25	1,195	1,426	1,088,261	46	1,598	1,528	1,255,114	58	1,983
Derailments due to defects of equipment .....	2,362	1,875,646	28	631	2,796	2,176,194	37	831	3,178	2,490,028	59	926
Derailments due to negligence of trainmen, signalmen, etc. ....	307	188,788	25	329	406	273,038	31	376	405	396,626	130	756
Derailments due to unforeseen obstruction of track, etc. ....	331	444,308	79	486	331	562,441	67	590	387	556,725	68	658
Derailments due to malicious obstruction of track, etc. ....	51	93,037	21	166	90	144,903	24	215	59	153,694	14	176
Derailments due to miscellaneous causes .....	1,217	1,063,095	83	1,334	1,572	1,303,624	109	1,512	1,785	1,713,947	186	2,196
Total .....	5,259	4,371,512	261	4,141	6,671	5,548,461	314	5,122	7,432	6,556,134	515	6,695
Total collisions and derailments .....	9,670	7,480,203	603	9,536	13,034	10,183,660	728	12,834	15,458	12,852,702	1,291	16,236

fyling diminution is seen in every item. As to passengers, the number killed in train accidents has fallen off materially from the figure of the year preceding, which itself was much less than half of the total of the year before that. In injuries from causes other than train accidents—that is to say, from causes which in large measure are to be classed as the victim's own negligence—the change is the other way. For this no explanation is apparent.

train accidents for three years past. This table includes nine collisions and 26 derailments not reported in the quarterly bulletins.

The Western of Minas Railway has had plans approved for an extension from Bomjardim, Brazil, to Falcão. The completion of the extension from Rio Claro to Angra dos Reis, 41 miles, has been authorized.



# MALLET ARTICULATED COMPOUND LOCOMOTIVES FOR THE EASTERN RAILWAY OF FRANCE.

Much attention has been attracted by the two articulated compound locomotives built last winter at the Schenectady Works of the American Locomotive Company for the Eastern Railway of France.

The articulated principle of steam locomotive construction was first developed by M. Anatole Mallet, of Paris, a French engineer, and the first articulated compound locomotive designed and built in this country, a product of the same plant of these builders and completed in 1903-4, was a development along the lines first introduced by M. Mallet, but modified to suit American conditions. Four years later, in 1908, the Eastern Railway placed an order with an American builder for the construction of two Mallets, specifying that they should be built in general after the builders' design, and in accordance with the usual American practice for this type of locomotive.

With the exception of threads, bolts and nuts, driving wheel tires, engine truck tires, staybolts and boiler tubes, which are in the metric system, these engines were built to the English system of measurements.

They were intended for road service and handle freight on the mining division of the road between Meurthe and Moselle, and took the place of the four cylinder compound consolidation locomotives built at the Epernay Works of the Eastern Railway of France, weighing, in working order, 170,000 lbs.

The boiler of the Mallets follows American locomotive practice throughout, except for the use of copper inside firebox and copper staybolts in the water legs, and the fact that the tubes are to the metric measurements. The firebox is wide and the foundation ring projects well outside of the frames and has the inwardly sloping side sheets characteristic of that type of boiler, the effect of which, as a means of facilitating or impeding circulation, is now a matter of discussion. The copper firebox and staybolts are in conformity with the usual continental locomotive practice.

The dome, which is of cast steel, is of similar design to that which was used on the first engine of this type in America, namely, the Mallet articulated compound built by this same company for the Baltimore & Ohio, which has proven very satisfactory.

The location of the lowest gage cock is such as to give 60 millimeters of water above the crown sheet on a  $2\frac{1}{2}$  per cent. grade. Beyond these few points there is nothing about the boiler to attract attention.

The principal modification in the design from other engines of the class from the shops of the same builder is to be found in the application of a leading two-wheel truck to the forward frame, carrying the low-pressure cylinders. With this exception these engines are similar to those built about a year ago for the Central Railway of Brazil, and illustrated in the *Railroad Age Gazette*, December 18, 1908.

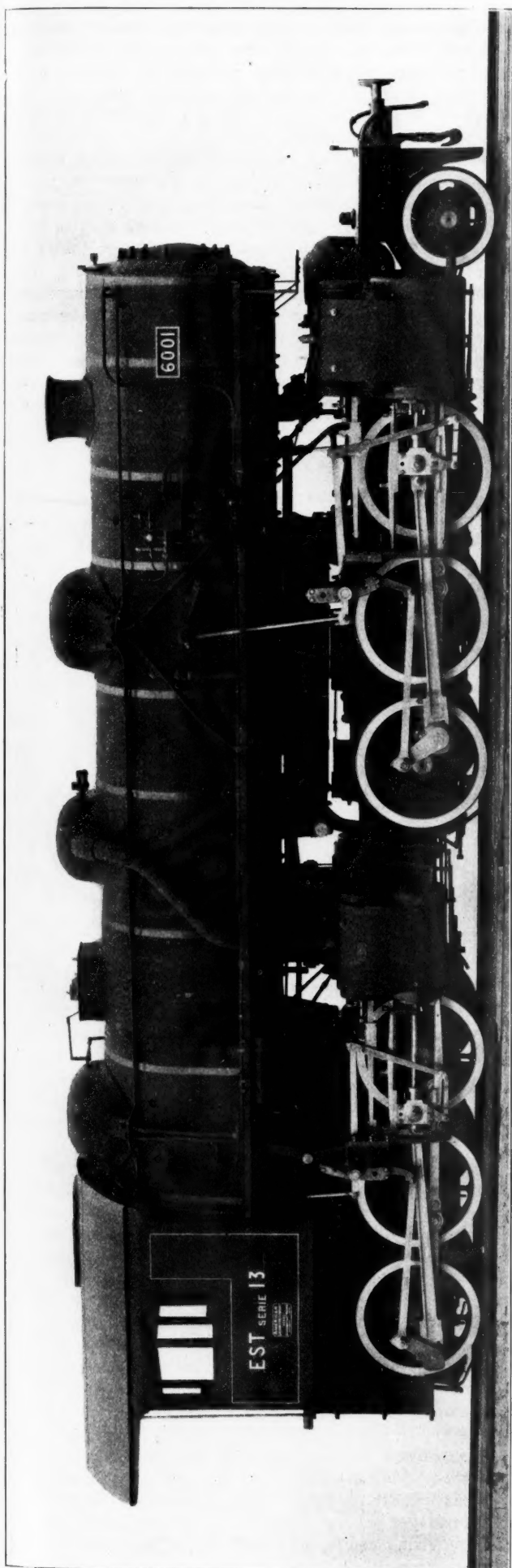
The truck is built and equalized in the same manner as the truck of the ordinary mogul locomotive. The equalization of the rear trucks extends over all three axles.

The advisability of using a truck, either leading or trailing, or both, on an engine of this type, built for freight service, is a disputed point, and need not be taken up here. The question was discussed fully in a paper presented before the annual meeting of the American Society of Mechanical Engineers by C. J. Mellin, an abstract of which was published in the *Railroad Age Gazette*, December 18, 1908.

On the engines under consideration the front truck was specified in order to keep the weight on the drivers within the limits of the rail capacity.

As will be seen from the illustrations, this feature necessitates moving the boiler forward, which in turn required some slight modifications in the cylinder design. The exhaust passages of the low-pressure cylinders, instead of leading up through the cylinder saddle to the openings in the center of

Mallet Articulated Compound for the Eastern Railway of France; Built by the American Locomotive Company.



the castings, as in previous designs of articulated locomotives built by the American Locomotive Company, are brought forward to exhaust the steam through openings in the front of each of the low-pressure cylinders which connect to a "Y" pipe, which is in turn connected by means of elbows and jointed pipe to the common exhaust pipe in the smoke pipe.

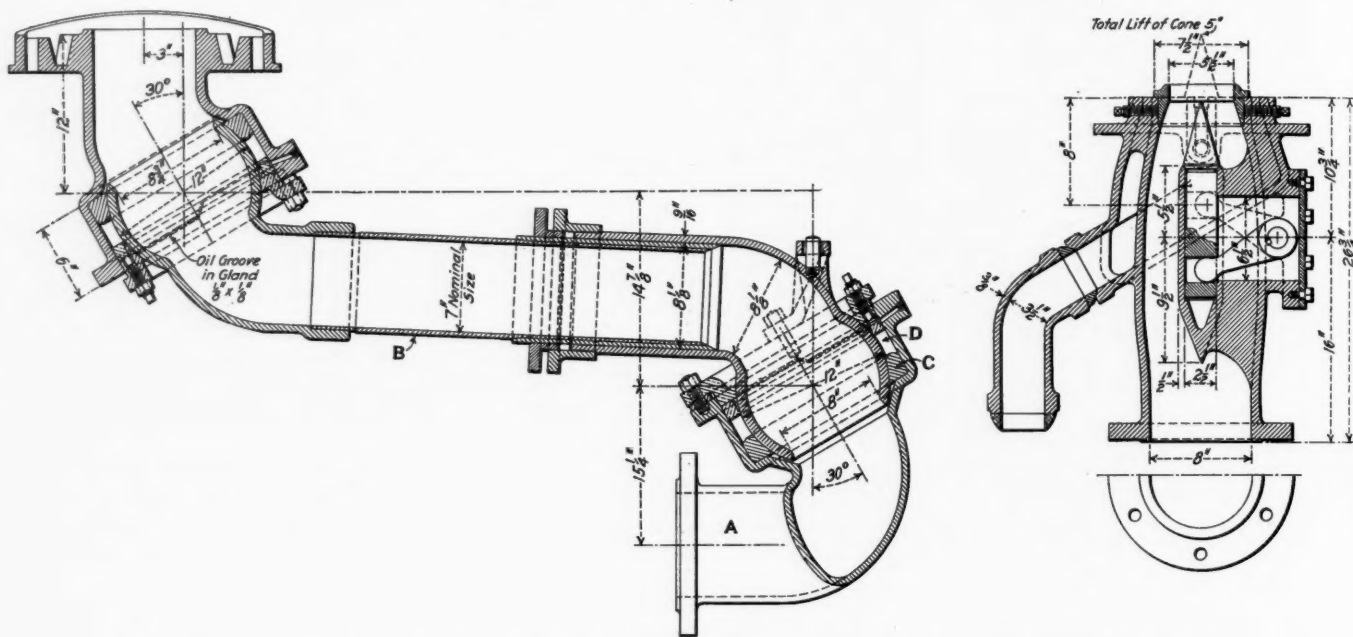
This results in a somewhat tortuous design of steam passages in the low-pressure cylinder, but was necessary, in order to increase the length of the exhaust pipe so as to reduce the angle of its deflection when rounding sharp curves. The steam passages are cored out with large radii, to counteract as far as possible the friction of the steam in passing through these tortuous passages.

This passage is illustrated in detail by the engraving of the exhaust pipe. The lower portion A is the Y pipe, and has its flanges bolted to the front faces of the cylinders. The body of the Y is the socket portion of the ball joint for the leading pipe B. The ball itself has a bearing against the cast-iron ring C, and is held in place and leakage is prevented by the

lowering the cone, that moves in a central guide, by means of the bell crank lever. It will be noticed that the casing for the cone and the web supporting it are sharpened and brought down to a point and knife edge, respectively, that are worked off at a small angle so as to offer the least possible obstruction to the flow of the steam, and so avoid the formation of eddies that would check the flow.

The arrangement of the steam and exhaust pipes from the high pressure cylinder is similar to that used in previous examples of the articulated locomotive, the results from the performance of those engines which have long been in service having proved that the ball and slip joints previously used required no change.

Another modification from some of the other examples of this type of engine built by the same builders will be noticed in the intercepting valve. In the engines under construction design of this valve is a reversion to the original form of Richmond compound intercepting valve, in which the emergency exhaust valve is contained in the same chamber as the



Exhaust Pipe Variable Nozzle and Joints for Mallet Compound; Eastern Railway of France.

cap above and by the vulcabeston packing put in the space D. The whole of this ball, including the pipe leading from it to the flange, to which the packing gland for the lead pipe is bolted, is of cast iron and in one piece. The slip joint for the pipe is of the usual construction, with a gland and packing, vulcabeston being used for the latter. The lead pipe B is of wrought iron and is brazed at the exhaust end to the ball joint elbow, and, where it passes through the stuffing box it is protected by a sleeve that is brazed on. The construction of the second ball and socket joint is the same as that of the first, and will be readily understood by reference to the engraving. In both cases there is an oil groove in the gland, with a connection for an outside oiler by which the ball can be lubricated in its movement, as indicated on the engraving. After leaving this passage the steam enters the vertical exhaust pipe in the smokebox. This pipe is fitted not only with a variable nozzle for the ordinary low-pressure exhaust, but with an annular nozzle surrounding the other, for the emergency exhaust of the high-pressure cylinder. This latter comes in through a rear pipe fitted with ball joints at each end, to mate with the saddle and exhaust pipe openings, respectively.

The variable feature converts the opening at the top of the exhaust pipe to an annular space, whose area can be changed at will by the engine driver. This is done by raising and

intercepting valve, instead of being a separate mechanism attached to the outside face of the cylinder casting.

The throttle is of the combination throttle and steam separator design; the same, except for a slight modification, as was applied to the articulated compound built for the Erie Railroad.

It will be noticed that there is but one front boiler support, which also includes spring center arrangement, whereas in previous designs of articulated engines there have been at least two and sometimes three front boiler bearings, although only one carried weight, excepting under abnormal conditions. The use of one boiler support, in the case of the engine here illustrated, was due to the fact of the application of the front truck and the distribution of the weight thereby resulting.

The valve gear is of the Walschaerts type, driven by return cranks on the main axles and by the crossheads of the respective engines. The arrangement of the gear is such that the weights of the parts of the valve motion of the front and back engines counterbalance each other.

The valve gear is operated by the railway company's design of screw reversing gear, which is very similar to that in use on other continental roads and which precludes the use of the power-reversing gear.

The following comparison between the weights of some of



the parts of the engines here illustrated and those of the standard consolidation engine in use on the New York Central Lines may be of interest:

	Eastern Ry. of France.	New York Cent. Lines.
Total weight	206,000 lbs.	234,000 lbs.
Weight on drivers	182,000 "	208,700 "
Cylinders	17 1/2 x 28 x 26 in.	23 in. x 32 in.
Driving wheels	50 3/4 in.	63 in.
Boiler pressure	214 in.	200 in.
Tractive power	42,300 lbs.	45,700 lbs.
Factor of adhesion	4.32	4.57
Weight of main rod	417 lbs.	850 lbs.
" front rod	208 "	181 "
" back rod	92 "	310 "
" intermediate rod	"	391 "
" high press. piston and rod	297 "	664 "
" low press. piston and rod	459 "	"
" cross heads	228 "	375 "
" crank pins (1 side)	184 "	300 "
Average wheel load	15,175 lbs.	26,088 lbs.
Tractive power in lbs. per 100 lbs.*	2,782 "	1,750 "

\*Average wheel load

The engine is fitted with the French Westinghouse automatic brake, with the Lille type of air pump. The following are some of the principal dimensions of the engine:

Cylinder, diameter, h. p.	17 1/2 in.
Cylinder, diameter, l. p.	28 "
Piston stroke	26 "
Gage of track	1.445 m. (4 ft. 2.89 in.)
Wheel base, rigid	9 ft.
Wheel base, engine	34 ft. 10 in.
Weight of engine	206,000 lbs.
Weight on driving wheels	182,000 lbs.
Heating surface, tubes	2,414 sq. ft.
" firebox	133 "
" total	2,547 "
Grate area	40.5 "
Journals, main driving	7 1/2 in. x 9 in.
" trailing	7 " x 9 "
" truck	6 " x 10 "
Boiler diameter first ring	66 3/4 "
Steam pressure	214 lbs.
Fuel	Soft coal
Firebox length	7 ft. 5 1/2 in.
" width	5 " 4 1/2 "
" thickness, crown, sides and back	0.55 in.
" thickness tubesheet	1.18 in.
" water space	4 in.
Tubes, material	Steel
" number	269
" diameter outside	1.92 in.
" thickness	0.093 "
" length	18 ft.
Stack diameter	17 in.
Stack, height above rail	13 ft. 9 1/2 "
Valve, travel, h. p.	5 1/4 "
" travel l. p.	5 1/4 "
" lap, h. p.	1 "
" lap, l. p.	7/8 in.
" exhaust lap	1/8 in.
" lead	1/8 in.
Wheels, diameter driving	50 3/4 in.

Wheels, diameter, truck.....33 1/2 in.  
Tractive effort.....42,300 lbs.

Weight on drivers	= 4.30
Tractive effort	
Weight on drivers	= 88.35*
Total weight	
Total weight	= 4.87
Tractive effort	
Tractive effort x diameter drivers	= 832.00
Heating surface	
Heating surface	= 62.88
Grate area	
Firebox heating surface	= 5.51*
Total heating surface	
Weight on drivers	= 71.45
Total heating surface	
Total weight	= 80.88
Total heating surface	
Displacement 2 h. p. cylinders, cu. ft.	= 7.24
Total heating surface	= 351.79
Displacement 2 h.p. cylinders	
Grate area	= 5.59
Displacement 2 h.p. cylinders	

\*Per cent.

### FAST FREIGHT RUNS.

The accompanying table shows the time, direction, etc., of fast freight runs of over 500 miles. The figures are compiled from returns made by the railways and need no explanation. Quite a number of roads decline to have the schedules of their trains published, so that the table does not cover by any means all the fast freight runs of over 500 miles for the entire country. We have intended to include only runs on which connections are maintained the same as with passenger trains; that is to say, wherever a train is late at a division terminus the crew of the next division wait for it. As a rule the runs here shown are made six days in each week, and that in the sense in which the term "daily" is used. Where three or more termini are named in a single item, the distance

### THROUGH FREIGHT TRAIN RUNS OF FIVE HUNDRED MILES AND OVER.

Initial road.	Train No.	Kind of freight.	From	To	Roads.	Distance, miles.	Direction.	Hours.	Average speed, m. trains per hr. daily.	Average No. of cars.
A. T. & S. F.	31	Per. mdse.	Kansas City	Denver	A. T. & S. F.	783	West.	50 1/4	14.2	1
A. T. & S. F.	33	Per. mdse. & P. C.	Chicago	Belen	A. T. & S. F.	1,355	S. W.	111 1/2	12.2	3
A. T. & S. F.	32	Per. mdse.	Denver	Emporia	A. T. & S. F.	625	East.	43	15.0	2
A. T. & S. F.	34		Belen	Chicago	A. T. & S. F.	1,355	N. E.	109	12.3	3
Do., C. L.	33	P. M. & frt. frm Cal	Albuquerque	Los Angeles	A. T. & S. F.—C. L.	888	West.	88 1/4	10.0	3
Do., C. L.	34	P. M. & frt. frm Cal	Los Angeles	Albuquerque	A. T. & S. F.—C. L.	888	East.	76 1/4	11.6	3
A. C. L.	208	A. C. D.	Pt. Tampa	Jersey City	A. C. L.—R. F. & P.—Penn.	1,243	North	84 1/2	14.7	1
A. C. L.	208	A. C. D.	Ft. Myers	Jersey City	A. C. L.—R. F. & P.—Penn.	1,316	North	92 1/2	14.2	1
A. C. L.	212	A. C. D.	Jacksonville	Jersey City	A. C. L.—R. F. & P.—Penn.	1,006	North	60	16.8	1
B. & O.	97	Mdse. & Pref. Ft.	New York	Chicago	C. of N. J.—P. & R.—B. & O.	1,000	S. W.	60	21.2	1
B. & O.	97	Mdse. & Pref. Ft.	New York	Cleveland	C. of N. J.—P. & R.—B. & O.	684	N. W.	36	21.8	1
B. & O.	97	Mdse. & Pref. Ft.	New York	Columbus	C. of N. J.—P. & R.—B. & O.	700	West.	41	23.5	1
B. & O.	97	Mdse. & Pref. Ft.	New York	Cincinnati	C. of N. J., P. & R., B. & O., B. & O. S. W.	770	S. W.	41	22.1	1
B. & O.	97	Mdse. & Pref. Ft.	New York	E. St. Louis	C. of N. J., P. & R., B. & O., B. & O. S. W.	1,100	West.	61	23.8	1
B. & O.	94	D. F., F. M., Per. & C.	Chicago	New York	B. & O.—P. & R.—C. of N. J.	1,000	E. & N.	59	20.4	2
B. & O.	98	D. F., F. M., Per. & C.	Chicago	New York	B. & O.—P. & R.—C. of N. J.	1,000	E. & N.	78	16.0	1
B. & O.	94	D. F., F. M., Per. & C.	E. St. Louis	New York	B. & O. S. W., B. & O., P. & R., C. of N. J.	1,100	E. & N.	64	19.8	1
B. & O.	98	D. F., F. M., Per. & C.	E. St. Louis	New York	B. & O. S. W., B. & O., P. & R., C. of N. J.	1,100	E. & N.	82	16.4	1
B. & O.	82	Live stk. mdse., & C.	Cincinnati	Baltimore	B. & O. S. W.—B. & O.	570	East.	39	18.4	1
B. & O.	82	Live stk. mdse., & C.	Chicago	Baltimore	B. & O. S. W.—B. & O.	795	East.	58	19.0	1
B. & A.			Boston	Chicago	B. & A., N. Y. C., L. S., M. C.	1,036	West.	60	17.2	..
C. Vt. 2		Mdse.	New York	Chicago	C. V.—G. T.	1,289	N. & W.	104	12.4	1
C. Vt. 2		Mdse.	Boston	Chicago	C. V.—B. & M.—G. T.	1,129	N. & W.	82 1/2	13.7	1
C. Vt. 2		Dairy	Chicago	Boston	G. T.—C. V.—B. & M.	1,129	E. & S.	80	14.1	1
C. Vt. 2		Mdse.	Chicago	New York	G. T.—C. V.	1,289	E. & S.	102	12.6	1
C. & O.			New York <sup>3</sup>	Cincinnati	C. of N. J.—P. & R.—W. M.—N. & W.—C. & O.			63 1/2	..	1
C. & O.			New York	St. Louis	As above, and So. Ry.			88 1/2	..	..
C. & O.			New York	Memphis	As above, and L. & N.			99 3/4	..	..
C. & O.			New York	Chicago	As above, and Big 4.			82 1/4	..	..
C. & O.			Louisville <sup>4</sup>	New York	{ C. & O.—N. & W.—W. M.—P. & R.—C. of N. J.			79	..	1
C. & O.			Cincinnati	Louisville	C. & O.		West.	50 1/4 & 57 1/4	..	2
C. & O.			Newport N <sup>5</sup>	Cincinnati	C. & O.		West.	45 1/2 & 45 3/4	..	2
C. & O.			Richmond	Chicago	C. & O.—Big 4.		West.	70 & 74 3/4	..	2
C. & O.			Chicago <sup>6</sup>	St. Louis	C. & O.—Big 4.		West.	72 & 81 1/4	..	2
C. & O.			Louisville	Newprt Nws.	{ Big 4—C. & O.		East.	76 3/4—88	..	2
C. & O.			Cincinnati	C. & O.	C. & O.		East.	65 & 67 1/4	..	2
C. & O.			Chicago	Denver	C. & O.		East.	58 & 62 1/2	..	2
C. B. & Q.		Mdse.	Chicago	Omaha	C. B. & Q.	1,101	W. & S. W.	68 1/2	14.8	1
C. B. & Q.		Mdse.	Chicago	Chicago	C. B. & Q.	501	West.	32 3/4	15.2	1

NOTE.—The references are to footnotes shown at the end of the table on the next page.

## THROUGH FREIGHT TRAIN RUNS OF FIVE HUNDRED MILES AND OVER.—(Continued.)

Initial road.	Train No.	Kind of freight.	From	To	Roads.	Distance, miles.	Direction.	Hours.	Average speed, m. per hr.	No. of trains daily.	Average No. of cars.
C. B. & Q.	...	Mdse.	St. Louis	St. Paul	C. B. & Q.	639	N&NW	57 1/4	11.2	1	...
C. B. & Q.	...	Mdse.	E. St. Louis	St. Paul	C. B. & Q.	568	N&NW	34 1/2	16.4	1	...
C. B. & Q.	...	Mdse.	St. Louis	Denver	C. B. & Q.	949	West.	68 1/2	13.9	1	...
C. B. & Q.	...	Mdse.	St. Louis	Billings	C. B. & Q.	1,307	N. W.	86 1/2	15.0	1	...
C. B. & Q.	...	Mdse.	Kansas City	Denver	C. B. & Q.	691	West.	48	14.5	1	...
C. B. & Q.	...	Mdse. and meat	Kansas City	Billings	C. B. & Q.	1,049	N. W.	67	15.6	1	...
C. B. & Q.	...	Mdse. and meat	Denver	Chicago	C. B. & Q.	1,010	NE&E	68 1/2	14.8	1	...
C. B. & Q.	...	Mdse. and meat	Omaha	Chicago	C. B. & Q.	501	East.	28 1/2	17.8	1	...
C. M. & St. P.	...	...	Chicago	Mitchell, S.D.	C. M. & St. P.	...	N. W.	65 1/4	...	1	...
C. M. & St. P.	...	...	Chicago	Butte	C. M. & St. P.	...	N. W.	152 1/4	...	1	...
C. M. & St. P.	...	...	St. Louis	Butte	Wab.—C. M. & St. P.	...	N. W.	180 1/4	...	...	...
C. & S.	...	...	Ft. Worth	Denver	F. W. & D. C.—C. & S.	811	N. W.	60	13.5	1	15
C. & S.	...	...	Denver	Ft. Worth	C. & S.—F. W. & D. C.	811	S. E.	73	11.2	1	25
C. & S.	32	...	Denver	Colo. Springs	C. & S.	...	S. E.	4 1/4	16.1	1	...
Gt. N.	...	...	St. Paul	Butte	G. N.	1,828	West.	150	12.2	1	...
Gt. N.	...	...	Seattle	Spokane	G. N.	1,828	East.	163	11.2	1	...
Gt. N.	...	...	Seattle	St. Paul	G. N.	1,828	East.	163	11.2	1	...
Ill. Cent.	...	Mdse.	Chicago	New Orleans	I. C.	912	South	57 3/4	16.0	1	33
Ill. Cent.	...	Mdse.	Chicago	Memphis	I. C.	526	South	35 1/2	15.0	1	34
Ill. Cent.	...	Mdse.	Chicago	Birmingham	I. C.	687	S&SE	51 1/2	15.0	1	22
Ill. Cent.	...	Mdse.	Chicago	Nashville	I. C.—N. C. & St. L.	559	S&SE	34 1/4	16.0	1	29
Ill. Cent.	...	Mdse.	Chicago	Omaha	I. C.	516	West.	30	17.0	1	24
Ill. Cent.	...	Mdse.	Chicago	St. Paul	I. C.—M. & St. L.	501	N. W.	35 1/2	14.0	1	26
Ill. Cent.	...	Mdse.	Chicago	Sioux City	I. C.	510	West.	35 1/4	15.0	1	15
Ill. Cent.	...	Fruit	New Orleans	Chicago	I. C.	912	North	50	18.0	1	60
M. C.	MC1	Mdse.	New York	Chicago	N. Y. C.—M. C.	957	N&W	56 1/2	17.0	1—2	40
M. C.	MC3	Mdse.	Boston	Chicago	B. & A.—N. Y. C.—M. C.	1,026	West.	62 1/4	16.0	1—2	40
M. C.	BA2	Dsd bf & Sp. Frt.	Un. Stk Yds.	Boston	M. C.—W. S.	970	East.	64	15.0	1—4	75
M. C.	NY2	Dry mdse. & S. Fr	Chicago	New York	M. C.—N. Y. C.	957	E&S	57 1/4	16.0	1	90
M. C.	BA2	Dsd bf & Sp. Frt.	Un. Stk Yds.	Boston	M. C.—N. Y. C.—B. & A.	1,039	East.	79	13.0	1—2	40
M. K. & T.	...	Per. and mdse.	St. Louis	Okl. City	M. K. & T.	587	S. W.	46	12.8	2	99
M. K. & T.	...	...	St. Louis	Denison	M. K. & T.	654	South	45	14.5	2	99
M. K. & T.	...	...	St. Louis	Dallas	M. K. & T.	760	South	54	14.0	2	99
M. K. & T.	...	...	St. Louis	Ft. Worth	M. K. & T.	750	South	53	14.1	2	99
M. K. & T.	...	...	St. Louis	Waco	M. K. & T.	839	South	60	14.0	2	99
M. K. & T.	...	...	St. Louis	Houston	M. K. & T.	1,077	South	78	13.8	2	99
M. K. & T.	...	...	St. Louis	Galveston	M. K. & T.	1,125	South	84	13.4	2	99
M. K. & T.	...	...	St. Louis	San Antonio	M. K. & T.	1,062	South	90	11.8	2	99
M. K. & T.	...	...	Kansas City	Dallas	M. K. & T.	517	South	39	13.3	2	53
M. K. & T.	...	...	Kansas City	Ft. Worth	M. K. & T.	507	South	44	11.5	2	53
M. K. & T.	...	...	Kansas City	Waco	M. K. & T.	596	South	55	10.8	2	53
M. K. & T.	...	...	Kansas City	Houston	M. K. & T.	834	S&SE	72	11.6	2	53
M. K. & T.	...	...	Kansas City	Galveston	M. K. & T.	882	South	87	10.0	2	53
M. K. & T.	...	F. M. & Live Stk.	Ft. Worth	St. Louis	M. K. & T.	750	N. E.	46	16.3	1	9
M. & O.	...	Mdse. & Fr. meat.	St. Louis	Mobile	M. & O.	644	S. E.	44	14.6	1	45
M. & O.	...	Mdse. & Fr. meat.	St. Louis	Montgomery	M. & O.	606	S. E.	39	15.5	2	90
M. & O.	...	Mdse. & Live stock	St. Louis	New Orleans	M. & O.—N. O. & N. E.	705	South	54	13.0	1	45
Nor. Pac.	...	Time freight	Minn. Trans.	Seattle	N. P.	1,912	West.	145	13.2	...	...
O. S. L.	...	...	Granger	Huntington	O. S. L.	541	N. W.	43 1/2	12.2	1	40
Sou. Pac.	...	...	Ogden	Sparks	S. P.	539	West.	46 1/2	11.6	1	46 1/2
S. P. L. A.	...	Oranges, etc.	Colton	S. Lake City	S. P., L. A. & S. L. C.	716	N. E.	48 1/4	14.9	Varying	29
S. A. L.	...	Miscellaneous	S. Lake City	Los Angeles	S. P., L. A. & S. L. C.	781	S. W.	69 1/2	11.32	1	37*
S. A. L.	25	Mdse.	Richmond	Atlanta	S. A. L.	570	S. W.	37 1/2	15.5	1	24
S. A. L.	11	Mdse.	Richmond	Savannah	S. A. L.	500	S. W.	36	14.0	1	28
S. A. L.	21	Mdse.	Portsmouth	Birmingham	S. A. L.—A. & B. A. L.	751	S. W.	46 1/2	13.0	1	25
S. A. L.	19	Mdse.	Portsmouth	Birmingham	S. A. L.—A. & B. A. L.	751	S. W.	50 1/4	15.0	1	30
Sou. Pac.	...	Mdse.	Galveston	S. Francisco	S. P.	2,182	West.	187	11.7	...	...
Sou. Pac.	...	Mdse.	New York	S. Francisco	M. S. S. L.—S. P.	4,312	S&W	359	12.0	...	...
Sou. Pac.	...	Mdse.	Ogden	S. Francisco	S. P.	786	West.	76	10.3	...	...
Sou. Pac.	...	Fruit & vegetables	Colton	El Paso	S. P.	755	East.	65	11.6	...	...
Sou. Pac.	...	Citrus fruit	Los Angeles	Ogden	S. P.	1,130	N&E	90	12.6	...	...
St. L. & S. F.	135	Mdse.	Kansas City	Birmingham	St. L. & S. F.	735	...	45 1/4	16.2	...	...
St. L. & S. F.	137	Mdse.	Kansas City	Birmingham	St. L. & S. F.	735	...	54	13.6	...	...
St. L. & S. F.	134	Mdse.	Birmingham	Kansas City	St. L. & S. F.	735	...	52 1/4	13.9	...	...
St. L. & S. F.	136	Mdse.	Birmingham	Kansas City	St. L. & S. F.	735	...	46 1/2	15.8	...	...
St. L. & S. F.	35	Mdse.	St. Louis	Sherman	St. L. & S. F.	644	...	46 1/2	13.8	...	...
St. L. & S. F.	35-435	Mdse.	St. Louis	Quanah	St. L. & S. F.	724	...	65 1/2	11.0	...	...
St. L. & S. F.	39-539	Mdse.	St. Louis	Sherman	St. L. & S. F.	644	...	48	13.4	...	...
St. L. & S. F.	39	Mdse.	St. Louis	Oklahoma.	St. L. & S. F.	542	...	40 1/4	13.4	...	...
St. L. & S. F.	39-739	Mdse.	St. Louis	Paris	St. L. & S. F.	584	...	46 1/2	12.5	...	...
St. L. & S. F.	37	Mdse.	St. Louis	Paris	St. L. & S. F.	584	...	44 1/4	14.0	...	...
St. L. & S. F.	37-337	Mdse.	St. Louis	Wichita	St. L. & S. F.	505	...	32 1/4	15.4	...	...
St. L. & S. F.	32	Mdse.	St. Louis	Wichita	St. L. & S. F.	505	...	33 1/4	15.0	...	...
St. L. & S. F.	34	Mdse.	Paris	St. Louis	St. L. & S. F.	584	...	44	13.3	...	...
St. L. & S. F.	34	Mdse.	Sherman	St. Louis	St. L. & S. F.	644	...	45 1/4	14.0	...	...
St. L. & S. F.	30	Mdse.	Paris	St. Louis	St. L. & S. F.	584	...	43	13.8	...	...
St. L. & S. F.	30	Mdse.	Sherman	St. Louis	St. L. & S. F.	644	...	46 1/2	13.8	...	...
St. L. & S. F.	30	Mdse.	Quanah	St. Louis	St. L. & S. F.	724	...	51 1/4	14.0	...	...
St. L. & S. W.	...	Mdse. & miscell.	St. L. & E. St. L.	Texarkana	St. L. S.	545	...	40 1/4	13.3	2	34
St. L. & S. W.	...	Mdse. & miscell.	Memphis	Texarkana	St. L. S.	306	...	21	15.0	1	14
St. L. & S. W.	...	Mdse. & miscell.	E. St. Louis	Waco	St. L. S. & St. L. S. of Tex.	803	...	65	12.4	...	...
St. L. & S. W.	...	Mdse. & miscell.	E. St. Louis	Ft. Worth	St. L. S. & St. L. S. of Tex.	761	...	62 1/4	12.1	...	...
St. L. & S. W.	...	Mdse. & miscell.	E. St. Louis	Dallas	St. L. S. & St. L. S. of Tex.	739	...	61 1/4	12.0	...	...
St. L. & S. W.	...	Mdse. & miscell.	St. L. & E. St. L.	Shreveport	St. L. S.	577	...	49 1/4	12.0	1	9
St. L. & S. W.	...	Fruit & vegetables	E. Tex. Pts.	St. Louis	St. L. S.—St. L., I. M. & S.	680	...	39 1/2	17.0	1—6	...
Wab. <sup>10</sup>	95	Mdse.	Buffalo	Chicago	Wab.	500	West.	32	15.6	...	...
Wab.	94	Mdse. & Drsd beef	Chicago	Buffalo	Wab.	500	East.	31	16.1	...	...
Wab.	91	Mdse.	Buffalo	Kansas City	Wab.	940	S. W.	59	15.9	...	...
Wab.	91	Mdse.	Buffalo	Omaha	Wab.	1,075	West.	80	13.4	...	...
Wab.	91	Mdse.	Buffalo	Des Moines	Wab.	1,004	West.	62	16.2	...	...
Wab.	91	Mdse.	Buffalo	St. Louis	Wab.	715	S. W.	35	20.4	...	...
Wab.	82	Meat & mdse.	Kansas City	Buffalo	Wab.	940	N. E.	57	16.5	...	...
Wab.	90	Meat & mdse.	St. Louis	Buffalo	Wab.	715	N. E.	44	16.2	...	...

\*For California points.

<sup>1</sup> One train only. Section from Ft. Myers connects at Lakeland, Fla. Five to ten sections run at certain seasons of the year.<sup>2</sup> In figuring distance and time from and to New York, 120 miles and 12 hours added to cover steamship trip—New London to New York.<sup>3</sup> Blue Ridge Despatch—Westbound. The time given is to Louisville. To Cincinnati it is 4 1/4 hrs. less. To all points this train takes freight from Philadelphia in 1 hr. less than from New York, and from Baltimore (W. Md.) in 1 1/4 hrs. less.<sup>4</sup> Blue Ridge Despatch—Eastbound. The time given is from Louisville. From Cincinnati it is 5 hrs. less. Connections are made to Baltimore and Philadelphia same as on westbound movement. To Boston the time is 26 1/4 hrs. more than to New York. From Memphis, St. Louis and Chicago, add 24 hrs., as on westbound.<sup>5</sup> "Kanawha Despatch"—Westbound. The times given are from Newport News. From Richmond the time is 4 1/4 hrs. less for the faster train and 4 hrs. for the slower.<sup>6</sup> "Kanawha Despatch"—Eastbound. The times given are to Newport News. To Richmond the time for the faster train is 8 1/4 hrs. less, and for the slower train 8 1/2 hrs. less.<sup>7</sup> Receives transcontinental freight from C., B. & Q., and delivers to Colorado Midland.<sup>8</sup> May 10 to July 1.<sup>9</sup> The five Wabash schedules—82, 90, 91, 94, 95—represent an average of 14 trains a day, and an average of 595 cars a day.<sup>10</sup> All of the items under M., K. & T. are represented by five trains: 2 from St. Louis, 2 from Kansas City, and 1 northward from Fort Worth.



and time are from and to the places farthest apart. The following is a list of the abbreviations used for names of roads:

*Names of Roads.*

- A. & B. A. L.—Atlanta & Birmingham Air Line.
- A. C. D.—Atlantic Coast Despatch.
- A. C. L.—Atlantic Coast Lines.
- A. T. & S. F.—Atchison, Topeka & Santa Fe.
- A., T. & S. F., C. L.—Atchison, Topeka & Santa Fe, Coast Lines.
- B. & A.—Boston & Albany.
- B. & M.—Boston & Maine.
- B. & O. S. W.—Baltimore & Ohio South Western.
- Big 4.—Cleveland, Cincinnati, Chicago & St. Louis.
- C. & O.—Chesapeake & Ohio.
- C. & S.—Colorado & Southern.
- C. B. & Q.—Chicago, Burlington & Quincy.
- C. M. & St. P.—Chicago, Milwaukee & St. Paul.
- C. of N. J.—Central of New Jersey.
- C. V.—Central Vermont.
- F. W. & D. C.—Fort Worth & Denver City.
- G. N.—Great Northern.
- G. T.—Grand Trunk.
- I. C.—Illinois Central.
- L. & N.—Louisville & Nashville.
- L. S.—Lake Shore & Michigan Southern.
- M. & O.—Mobile & Ohio.
- M. & St. L.—Minneapolis & St. Louis.
- M. C.—Michigan Central.
- M. K. & T.—Missouri, Kansas & Texas.
- M. S. S.—Morgan Steamship Line.
- N. C. & St. L.—Nashville, Chattanooga & St. Louis.
- N. O. & N. E.—New Orleans & North Eastern.
- N. P.—Northern Pacific.
- N. Y. C.—New York Central and Hudson River.
- N. Y. N. H. & H.—New York, New Haven & Hartford.
- O. S. L.—Oregon Short Line.
- P. & R.—Philadelphia & Reading.
- Penn.—Pennsylvania.
- R. F. & P.—Richmond, Fredericksburg & Patomac.
- St. L. & S. F.—St. Louis & San Francisco.
- St. L. S.—St. Louis Southwestern.
- S. A. L.—Seaboard Air Line.
- S. L. I. M. & S.—St. Louis, Iron Mountain & Southern.
- So.—Southern Railway.
- S. P.—Southern Pacific.
- S. P. L. A. & S. L.—San Pedro, Los Angeles & Salt Lake.
- S. P., P. S.—Southern Pacific, Pacific System.
- Wab.—Wabash.
- W. M.—Western Maryland.
- W. S.—West Shore.

*Kinds of Freight.*

- A. C. D.—Atlantic Coast Despatch.
- D. Frt.—Dairy freight.
- F. M.—Fresh meat.
- L. S.—Live stock.
- Mdse.—Merchandise.
- P. M.—Perishable merchandise.
- Pref. F.—Preferred freight.
- Sp. Frt.—Special freight.
- Veg.—Vegetables.

## HOW TO BE A FIRST-CLASS CHIEF CLERK.

BY F. T. DICKERSON,  
Central Railroad of New Jersey.

The young man who would reach the chief clerk's desk and satisfactorily fill that position, must have experience. How is he to get it? He must begin at the bottom and advance. There is no better way of reaching a place on the ladder than by climbing. The upper rounds may not be grasped in midair. Herbert Spencer tells us that it is a law of all organized things that "efficiency presupposes apprenticeship," and efficiency in small employments is the surest guarantee of mastery in larger ones. As an illustration, John Wanamaker began to be a great merchant by sweeping the floors of a store and doing general errands. This experience may be acquired in a hundred different ways. Mentioning one case, the boy began as a messenger, and in regular order served as telegraph operator, assistant agent, agent, clerk, dispatcher, general office clerk, and assistant chief clerk, until he finally became chief clerk. Too frequently the young man is disposed to lose heart by contemplating the great disparity between his first petty achievements, and the goal of his ambition; but let him remember that as the greatest edifice is the result of laying one brick upon another, so the most distant goal may be reached by the humble method of taking just one step at a time. Having had the necessary experience, the individual is not only prepared to do his work efficiently, but to thoroughly enjoy it.

### VERSATILITY.

After experience may be placed versatility. From his previous training the chief clerk will not only have some knowledge of the general requirements of the position, but will know how best to adapt himself to every phase of the

work. This will require on his part as thorough a knowledge of the attitude of his superior as he is able to acquire, in order that he may have respect at all times to his wishes, and so that he may adjust the matters which come before him from the viewpoint, as far as possible, of that official.

### ADMINISTRATIVE ABILITY.

So too with reference to those under him. He will give evidence of administrative ability in his selection of helpers, having care that they be both competent and congenial. He must bear in mind that much of the success achieved in the conduct of the office is due to the sweat and hard work of the faithful men who comprise his staff. He will not be unreasonable in what he asks of his men, but will show that, should necessity require, he is both able and willing to undertake as much as he demands. Thus will he secure from his men the maximum of service without pushing or intimidation, "striving by that noble contention or emulation of who best may serve and best agree." The chief clerk must be quick to detect inefficiency, and apply the remedy. He must see that the business of the office is kept up to date; that all work is executed with neatness and accuracy, and that the office records are compiled in a systematic and businesslike manner. He will see that his entire staff has its duties so divided that each man is, in a peculiar sense, at his own work—not only the work assigned to him, but, what is more important, the work he is best qualified to do. The imperative order on the leaky fishing boat at a distance from shore finds its application here: "Either pull, bail, or cut bait."

### RELATIONS WITH OTHER DEPARTMENTS.

The chief clerk will aim to promote both cordial and intimate relations between his own office and those of the other departments, and will thus seek to keep in touch, in a general way at least, with what is going on. Access to other offices will also enable one to pick up something of interest or value in the conduct of his own department. We are never too old to learn.

### PERSONAL.

The chief clerk must be an example for others in personal appearance, habits and conversation. He will not be the last man to arrive at the office in the morning. Neither will he be the first to knock off in the evening. He will acquire the habit of regularity, and expect the same of those in the office. In his endeavor to bring the organization of his department up to a high standard of efficiency, he will appreciate the need of a patient, amiable and kindly manner. Having himself felt the uplift of an encouraging word, or an appreciative smile or nod, he will be ready to prove by act or word to those about him that he has human sympathy. To go about with a grouch, or a chip on one's shoulder, exercising authority by harsh or arbitrary measures, will breed a spirit of discontent. To give way to the thousand and one perplexing and worrying things of office life is to court defeat. For the same reason that the walker of the tight rope exercises care that he may not fall, the chief clerk will keep his poise. He will master, rather than be mastered by, his difficulties, appreciating the fact that worry hinders, rather than facilitates, the solving of vexatious problems.

### LOYALTY AND FAITHFULNESS.

To measure up to the standard of our subject, a chief clerk must not only keep "on the job," but he must be proud of his job, and strive to make the job proud of him. He not only works it up, but he talks it up, in a dignified way. The position is worthy of his best effort and word, and he is therefore not only faithful, but loyal to the interests he represents.

### ANTICIPATES THE WISHES OF HIS SUPERIOR.

In no way, perhaps, does the chief clerk show his efficiency more indisputably than in the things he saves his superior from. He anticipates the desires and intuitively discerns the judgments of the man above him. He is neither reckless, nor does he presume to know more than he should; but while remembering that he is under authority, he fails not at the

psychological moment to *act* for his chief. When, however, matters of such proportions come up as call unmistakably for the judgment of his superior—knotty problems, questions of policy to be decided, large expenditures for improvements, etc., etc.—he presents, properly tabulated, such notes, papers, figures, etc., or makes brief abstracts therefrom, as may be possible, so that when the general officer's eye glances at the memoranda, a decision may be reached without the reading of many pages, which would otherwise be necessary in order to arrive at a right conclusion. This facilitates greatly the work of the already overtaxed officer, and none more than he is in a position to appreciate the sentiment—I want what I want, *when* I want it.

#### ACTIVE INTEREST IN AFFAIRS OF EMPLOYER.

Not only does the chief clerk show his timber in the collation of data available for the adjustment of matters calling for immediate settlement, but likewise in his capacity to cull out, and then at the proper time present for the consideration of the superior officer facts which may vitally affect the future policy and prosperity of the corporation, is his worth shown. In a word, he is alive to every interest, present and future, of his employer. He is prepared to show from time to time just what each department is doing in the way of securing results, without it being necessary for the officer in charge to exhaust his energy and time in sifting over a mass of details such as usually come from the several departments of the corporation, although such detailed data should likewise be held subject to inspection by that officer.

#### TACT.

Next to the officer himself there is probably no one more frequently approached by persons in difficulty than the chief clerk—for the very reason, perhaps, that he is close to headquarters. First will come a man who thinks he has been unjustly disciplined by a departmental officer; then the man whose mother-in-law has died in Kansas, and he can secure neither a leave of absence nor a pass; then we have those who object to the quality or quantity of food served by the caterer; the sick, the sad, the disgruntled, those who are hard up. If the chief clerk is happily able to advise with these and many other similar individuals, and is willing to enter, in a measure, into the difficulties of those who labor with him to a common end—if he is accessible, and knows when to admonish and reprove without offending, how to cheer and encourage without presuming to pass upon the merits of the case, he is very often able to render valuable service for his employer, and at the same time enhearten and thus make more useful those who are in trouble, and may be discouraged.

#### COURTESY.

Of all things required of a chief clerk, perhaps nothing exacts more from him, and declares at the same time more plainly what he is, than his treatment of the stranger who comes within the office gates. The difficulty lies not in the number alone, though this is legion, but in the multiplicity of their behests. The clerk must remember that "a satisfied patron is the best advertisement." It is right here that the best that is in the man finds freest scope for its display. Those desiring to negotiate business terms; those with devices to place on trial; some to sell goods; some to commend; others to remonstrate; the dissatisfied; the angry; all must be dealt with, sometimes by letter, frequently on the 'phone, but more often in person. How to do it is the question. A general officer once said: "It is not expected that every one who calls will secure what he is after, but all can be treated with consistent courtesy and go away satisfied." A chief clerk should adhere to this suggestion, and make it a point to see and talk personally with nearly every caller, sometimes to listen attentively to an alleged grievance, sometimes to explain that the officer whom they sought to see was engaged or absent, as the case might be, but always with the view of ascertaining whether there was not something he could do to save the time of both parties and to expedite or settle the matter in hand.

My thought can be expressed in the phrase—one man can *refuse* a request and gain a friend, while another can *grant* the favor and make an enemy. It's the way it is done!

#### INDUSTRY.

Thus we see that a chief clerk, if he be making good, is a man who does things. He does not wait to have things happen; he makes them happen; and things that are worth while become matters of routine with him. The word "can't" finds no place in his vocabulary. Difficult tasks serve but as an inspiration to overcome them.

#### SUMMARY.

Such a chief clerk as I have tried to describe—whose knowledge of his position and duties has been acquired at considerable cost—whose versatility is unquestioned—whose regularity and precision are unfailing—whose determination will not brook undue delay, much less defeat—whose patience and courtesy prevail despite perplexing problems and the necessity of dealing with all phases of human nature—whose discernment sees not only around but through the more intricate ways of men and matters, and whose integrity is as unquestioned as the white of Alpine snow—this man is not only fit for the position of chief clerk, but will prove himself in the office a workman that need not be ashamed. This man will not need to strike for wages, for a higher wage and suitable recognition will some day strike him.

#### IMPROVED DISTANT SIGNALS IN BELGIUM.

The line of the Belgian State Railway between Brussels and Antwerp, 27 miles, now has its distant signals equipped with white boards to give an "optical indication of approach to distant signal"; and, in connection with some or all of the signals there are also electric lights fixed on posts about 20 ft. high, which serve the same purpose at night, or, with two lights of different colors, repeat the indication of the distant signal. This idea of aiding the engineman to surely "find" the distant signal was broached by Mr. Weissenbruch, the director of the safety appliance department of the state railways, several years ago; and now he has put it in operation. The new fixtures are the subject of a long article in the Bulletin of the International Railway Congress Association for October. From the statement as printed, we judge that all of the signals on this 27-mile section are supplied with one or the other of these adjuncts, though we find no specific statement of the number in use. Full page photographs are given of the electric signals at several different points. By the use of the electric light signals, which are always lighted as soon as a fog comes on, the number of cases of engine-men overrunning signals has been greatly reduced, one comparison showing 43 cases before the introduction of the new signals and two cases afterward. In November, 1908, there was no case of overrunning, whereas during November of the preceding year there were 25 cases. On another line the Belgian State Railways are putting in use the Cousin magazine detonator, but no record of the service given by the detonators is presented. Mr. Weissenbruch observes that, no doubt, there will be complaints of the noise nuisance where these are used.

The arrangement of white horizontal bars or boards has been made standard for future installations throughout the lines of the State Railways. Each bar is 16 ft. 5 in. in length and is fixed in a diagonal position as related to the track; and the bars are placed 165 ft. apart. Some of them are made of white enamel plate carried on iron posts, and others are made of second-hand timber whitewashed. The headlight of the locomotive makes them plainly visible at night.

With the lights, the first trials were with three fixed green lights and two changing lights, the five being spaced 330 ft. apart. Thus the first one would be encountered 1,650 ft. before reaching the signal. Later the following arrangement was tried: Three changing lights approaching the distant



signal, about 500 ft. apart, and then, beyond the distant signal, two more changeable lights, one 660 ft. beyond the distant and the other 1,320 ft. beyond. In another arrangement three approach indicating lights were placed for the distant signal and two others in a similar way approaching the home signal. The trains on this line run on the left-hand track and the signals are at the left of the track, yet on most of the locomotives—all except the very latest patterns—the engine-man is on the right-hand side of the cab. Approaching a junction where there are two distant signals, on the two up-rights of a bracket post, the approach light signals are also arranged in pairs, side by side, on a bracket post.

The approach or repeating signals are lit by current from electric circuits extending from lighting stations at both ends of the line and from one at the center; and at each signal cabin there is a storage battery.

The Belgian State Railways have adopted green for all clear and yellow for caution, and in the latest arrangements these colors are given in the electric repeating signals.

### VALUATION OF RAILWAY PROPERTIES.

BY ROBERT YATES.

The value that may be placed on railway properties depends on the purpose for which the valuation is made, i. e., valuations to govern sale and mortgage, valuations for assessment and taxation, valuations for insurance.

Valuations to govern sale and mortgage may include every item of expense that enters into the construction and equipment of a road, excepting those of misfortune, as mentioned below.

Valuations for assessment is limited to the tangible value, and exclude all expenses incidental to construction that can not be shown to be a definite part of the cost.

Valuations for insurance embrace only a small portion of the property subject to damage by fire, wind and water, etc.

It is with reference to valuations for assessment and taxation that this article is chiefly intended.

The physical features which constitute a complete railway encompass values that are tangible or which may be surveyed, measured and accounted, and values which are intangible but a part of the legal cost of construction, such as commissions and charges to financiers for accumulating and disbursing moneys, profits to general contractors who assume liabilities for the completion of whole departments of construction, salaries and expenses of officers and assistants during the period of incubation of the enterprise and construction of the road, expenses of a law department with all its uncertainties, and interest on moneys invested during the entire period of construction.

There are also expenses of misfortune, which no road of material length escapes entirely, such as damage to unfinished work by freshets and storms, land slides, forfeits for injuries to men and damages to contiguous properties, strikes among men and delays of supplies, together with a percentage of mismanagement unavoidable in the conduct of all affairs of men.

The aggregate sum of the intangible values of a railway is a material part of the cost, but how are these items to be defined and accounted? The salaries of officers may be estimated, but what limits shall be placed on the time they would spend? The rate of interest on investment may be fixed, but when shall the interest period begin and stop?

The general contractor's profits may be estimated, but a general contractor is not indispensable in the construction of a railway, though it is customary to let the work of construction in large sections to general contractors, subject to a forfeit for non-completion of contract. These contractors sublet the work in separate departments and small sections to "sub-contractors." The sub-contractors are then the real con-

structors and builders, and the general contractors' duties and liabilities may be assumed by the railway company and its engineers.

Costs of construction due to misfortune or mismanagement are charged to loss and are no part of the subsequent value.

Then the real elements of value of a railway are those which may be defined and estimated on a comprehensible and reasonable basis, and the value at any given time is the cost of construction at that time, less the depreciation caused by wear and tear of use, and decay or wasting away by natural causes.

The cost of each element of construction is subject to definite estimate, and the depreciation is subject to logical reasonable estimate by process of average, proportion, or actual measurement.

All materials of which a railway is built are subject to depreciation; some so rapidly as to require renewals at periods of months, others so slowly that actual renewals do not come in a lifetime.

It is customary in railway practice to designate all expenses subsequent to the completion of the road as "maintenance," and engineers who have followed railway practice are inclined to this distinction in making a valuation. But, in fact, every item of expense put on any structure of a road is a renewal or partial renewal. Replacing a tie is a renewal, cleaning out a ditch in a cut is a renewal of normal conditions, replacing a brake-shoe is a renewal, etc. There is no item of cost which enters into construction that is chargeable to maintenance in the matter of valuation.

The cost value and depreciated value of railway properties at any given date is best shown by considering a few of the principal elements of construction one at a time.

#### ROAD BED.

The excavation and embankment (cuts and fills) of railways are usually assumed to undergo no depreciation. The shrinkage of embankments is attributed to settlement, and an adjustment of the materials to a condition of solidity, and such repairs as are made are commonly charged to "maintenance of way."

There is, however, a slow wasting away of the road bed, which occurs chiefly from the sides of cuts and fills. This is manifest in the constant filling of the ditches in cuts, and in the reduced widths of embankments in old roads. This depreciation is difficult to estimate as the waste is small in comparison with the entire body. In a careful detailed measurement survey of a number of miles of road in southeastern New York state that had been built about 55 years the writer found the embankments over long reaches one foot narrower than the original width.

This could not be attributed to settlement as settlement is vertical and could not reduce width. Further the margins of these embankments had been used as paths by workmen and pedestrians from the time the road was built, and if we allow 2/10 of a foot worn away the slopes being 1½ to 1 then the total waste from the sides was 1.6 feet. The material was a mixture of yellow clay loam, sand and gravel, offering a fair average resistance to erosion.

If valuation is based on the quantities as found by actual survey at the time of valuation there is no depreciation. But if based on records of original quantities and surveys there is a depreciation to be considered according to the material of which the road bed is built.

#### TRACK STRUCTURE.

The value of steel rails on any date and at any given point in a track depends on the value of new rails, value of the rails when removed from the track, the number of maximum concentrated loads to which they have been subjected, and the number of maximum concentrated loads they will withstand. A valuation made on this basis would, however, involve labor far beyond the requirement of the purpose of any valuation.

A formula used on some railways in the valuation of their

steel work is based on: the value of new steel, value of the steel on removal, time it has been in use, and a certain assumed life or

$$\frac{(a-b) \times \frac{c}{d}}{a} = x$$

in which

a = value of steel.  
b = value of steel on removal.  
c = time in use.  
d = assumed life.  
x = percentage of depreciation.

This formula is erroneous in the factor of assumed life.

If the number and weights of engines and cars passing over the rails were equal year to year, then the life of the rails would vary only as the quality of the steel. But there are cycles of years of active business when the maximum number of maximum loads pass over the rails; there are other cycles of years when the minimum number of maximum loads pass over the rails. (It is the heavy concentrated loads that destroy the rails and track.)

Again the steel supplied by the rolling mills varies in every shipment and also varies in the same shipment; the condition of ballast, ties, rail joints, etc., vary on different roads and on different sections of the same road; all of which affect the life of the rails.

It is then evident that no definite life can be given to track steel.

But it is not necessary for the purpose of valuation to give track steel any definite life either in years or tons wearing capacity.

The practical value of track steel as it stands in an old road as a whole is the average between the gross cost value and net selling value.

New steel is laid on main trunk lines at periods varying from six to twelve years more or less according to traffic; and over varying reaches of track from 10 to 50 miles more or less according to requirement. A bird's-eye view of an old road showing the rails colored according to time in use would show rails new, rails 25 per cent. worn, rails 50 per cent. worn, rails 75 per cent. worn, etc.; the average condition would then be

$$\frac{0 + 25 + 50 + 75 + 100}{5} = 50 \text{ per cent. or}$$

the average condition and value would then be that of new rails plus that of old rails divided by two.

Again consider any one mile section of track and rails laid periodically for years. They are at new value when laid and at selling value when removed, then at new value again and so on alternately indefinitely. Then for a period of years extending over many layings and removals the average value is the average between the gross purchase price and net selling price for that period.

The purchase price is the lowest obtainable price, and the selling price the highest obtainable price, freights considered.

Rails are classified as:

New rails, heavy sections.  
New rails, light sections.  
Relaying rails, select.  
Rerolling rails, and  
Remelting or scrap rail.

Rails removed from the main trunk line will yield a percentage of select relayers, a percentage of re-rolling rails and a percentage of scrap, etc.

Then in fixing the value there will be a percentage having the average value of new rails and select relayers—a percentage having the average value of new rails and rerolling rails, and a percentage having the average value of new rails and scrap.

Angle plates or splice bars are sold with rails when re-

moved from the track and usually at the same rate per ton.

The best plates are selected to accompany the relaying rails, and the actual value of these in the track is the gross value of new plates plus the net value of plates removed divided by 2.

The net value of plates removed is

a : b :: c : x, wherein

a = gross value of new rails.

b = net value of relaying rails.

c = gross value of new angle plates.

x = net value of angle plates removed.

And the average value of the plates will be

$$c + \frac{\left(\frac{b \times c}{a}\right)}{2}$$

The remaining plates have only the value of scrap when removed from the track, and the average value of these plates in the track is the gross value of new plates plus net value of scrap divided by 2.

Bolts and spikes are scrap when removed from the track, and while in the track they are in constant process of renewal and in all stages of deterioration from 100 per cent. to 0 per cent. Then their average value in the track is their gross value new, plus net value as scrap, divided by 2.

#### TIES.

The useful life of railway ties in the United States is about six to twelve years, depending on the wood, the location and soil. But the life of ties does not in any way effect their average value in the track.

They are placed 2,500 to 3,200 ties per mile, according to class of track and practice of the road. Renewals of 250 to 400 ties per mile per annum must be made to maintain the track in an average efficient condition. They are then in a constant uniform average condition by construction.

Assume these ties to be entirely renewed every eight years and a uniform percentage of renewals made each year, then there is 12.5 per cent. renewed and 12.5 per cent. removed each year and their average value at any time is 50 per cent. Example:

	Value.
Ties in place, 8 years.....	0.0 per cent.
" " " 7 ".....	12.5 "
" " " 6 ".....	25.0 "
" " " 5 ".....	37.5 "
" " " 4 ".....	50.0 "
" " " 3 ".....	62.5 "
" " " 2 ".....	75.0 "
" " " 1 year.....	87.5 "
" placed the 8th year.....	100.0 "
	450.0 per cent.

450

— = 50 per cent.

9

The gross value of ties is the cost price at base of supply plus freight and cost of removal from the track. (Cost of placing ties in the track is included in "tracklaying.")

Then the average value of ties in use in an old road is:

$$\frac{a + b + c}{2} \text{ wherein}$$

a = cost price at base of supply.

b = freight to point of use.

c = cost of removal from track, and disposal.

This is true for every road whether it be the policy of the company to remove the ties while yet in fair condition or allow them to deteriorate to absolute decay; ties are valueless when worn out and removed, and they are worn out when they reach that stage of decay at which it is the policy of the company to remove them. Neither does it effect this result that ties decay in a parabolic or increasing ratio. The average value in an old road is always 50 per cent. This valuation is also applicable to all structures which are maintained by constant renewal of their parts and which have no value on removal, such as fences, grade crossings, small, cheap buildings, timber trestles, small timber bridges, etc.



### BALLAST.

There are a number of different kinds of material used as ballast, the best local material usually having the preference. Among those most common are gravel, crushed stone, cinder, furnace slag and burned clay.

The functions of a good ballast are to provide a bed that will tamp under all conditions, to insure drainage from the ties, to distribute the load imposed, and to obviate dust.

Gravel and cinder ballast deteriorates by intermixing with the surface of the road bed, and by grinding and wasting away by wind and rains. This class of ballast is renewed by adding a surface dressing periodically. This dressing is usually one-third to one-fourth the total depth of the ballast; assume it to be one-fourth, then we have the total ballast divided into four parts, the lowest stratum being mixed with the road bed is of no value as ballast equal 0. The first useful stratum value 25 per cent., second useful stratum value 50 per cent., third useful stratum 75 per cent., and the last new stratum 100 per cent., then the average value equals  $0 + 25 + 50 + 75 + 100$

5

= 50 per cent. of the value of new

ballast.

The idea here conveyed is that the ballast lies in layers of varying value. This is not strictly true, as ballast becomes intermixed in tamping, but this does not affect the logical result governed by the method of renewal of 50 per cent. of value of new ballast.

Crushed stone ballast as a ballast deteriorates also by intermixing with the earth of the road bed until it loses the function of drainage, when it is no longer ballast. This class of ballast is renewed by raking or shoveling it out on the sides of the track and shaking out the earth through a fork, then replacing and retamping the cleaned stone.

This renewal is worth 100 per cent. when performed and gradually declines to zero, then 100 per cent. on renewal, and again zero, and so on continuously; then the average value between 100 per cent. and 0 per cent. is 50 per cent.

Crushed stone deteriorates by loss of a small percentage in the road bed, by slow grinding under action of the wheel loads, and by breaking in tamping, etc. This loss must be renewed when it reaches a certain limit or 30 per cent. of the whole. Then we have the value of the stone in all stages of decline between 100 per cent. and 70 per cent. in constant repetition or an average constant value of 85 per cent. of value of new stone.

The cost of crushed stone laid down beside the track is about 75 per cent. of the total cost of the ballast; then the average value of a stone ballast in an old road will be:

Stone, 85 per cent. of 75 per cent. .... 63.75 per cent.  
Renewal by cleaning, 50 per cent. of 25 per cent. .... 12.5 "

Average value stone ballast ..... 76.0 per cent.

of values of new ballast.

The proportionate cost of stone laid down to the total cost of ballast will of course vary in different localities, depending on cost of crushed stone and cost of haul.

### TURNOUTS AND CROSS-OVERS.

A cross-over is practically two turnouts with additional switch timber.

Turnouts or switches are made up of switch ties, switch stand, switch rod, tie bars, points or switch rails, rail braces, guard rails, frogs, etc.; with friction plates, head blocks, step chairs, lamps, etc., in combination according to design.

Switches are subject to use in proportion to the business over the track to which they lead; this is very unequal, hence the wear and breakage on a number of switches is very unequal, and they are in process of more or less constant renewal in total and in their parts. Then in a number of switches in use they are in all conditions of deterioration from 100 per cent. to 0 per cent.

The value of the switch ties is then determined the same

as that of common track ties, and is 50 per cent. of the gross cost value. And the value of the steel is the gross cost of new steel plus the net value of same as scrap divided by two.

Then the total value of a number of turnouts or switches in use is the average value of the steel plus the average value of the ties.

### BRIDGES.

Bridges are of several classes, steel trussed bridges, steel girder bridges, steel trestle bridges, wood trestles and masonry or concrete arched bridge.

The factors which enter into the value of a steel structure are cost of steel new at works, value of steel on removal, freights, cost of erection and painting, time in use and life of structure.

The value of the structure at any given time is illustrated in Fig. 1.

$$\left( \frac{a-b}{L} \times L - T \right) + b \quad \text{in which}$$

a = gross cost of steel work completed.

b = net value of steel on removal.

L = life of structure.

T = time in use.

Graphical illustration of this is

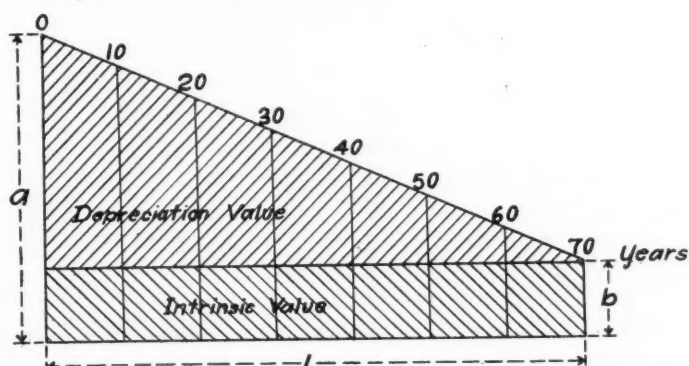


Fig. 1.

The value of a stone or timber structure in which there is no salvage is the total cost of construction plus cost of removal, or

$$\left( \frac{a}{L} \times L - T \right) + \left( \frac{b}{L} \times T \right)$$

a = total cost of construction.

b = cost of removal.

L = years of life.

T = time in use.

Graphical illustration of this is given in Fig. 2.

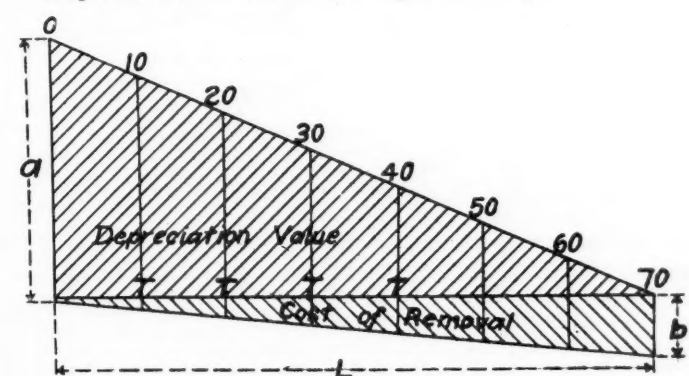


Fig. 2.

### BUILDING STRUCTURES.

The buildings which may be found in possession of a railroad company embrace depots, shops, engine houses, office buildings, storehouses, hotels, residences, elevators, docks, etc., together with various and numerous minor structures.

A railway company is entitled to the same returns as a private investor in a building enterprise, and few investors

would venture \$10,000 in an enterprise that could not ultimately return at least four times the amount invested.

This is the basis here taken on which to determine the value of building structures.

Assume, for explanation, a building costing \$10,000, then four times \$10,000 = \$40,000 return expected.

The interest on investment and life of structure required to produce this return will be for various structures.

Finished frame, average, 8 per cent. for 50 years.

Rough brick or stone and wood, 7 per cent. for 57.14 years.

Finished brick or stone and wood, 6 per cent. for 66.66 years.

Finished brick and steel, 5 per cent. for 80 years.

The commercial life of a building ends when it no longer pays directly or indirectly the lowest current interest on the investment.

Assume this to be 3 per cent.; then if a first-class structure averages 5 per cent. during its commercial life and 3 per cent. when removed it must pay  $(5 \times 2) - 3$ , or 7 per cent. when built. Then the decline of percentage of this class of structure is from 7 to 3 per cent. in 80 years, and if the value new is \$10,000, the value on removal will be  $7 : 3 :: 10,000 : x = \$4,285$ .

And the value at any intermediate date will be

$$\left(\frac{a}{L} \times L - T\right) + \left(\frac{b}{L} \times T\right).$$

a = cost value.

b = removal value.

L = commercial life.

T = time in use.

And the percentage of value that a structure bears to its cost will be

$$\left(\frac{a}{L} \times L - T\right) + \left(\frac{b}{L} \times T\right).$$

a+b.

Graphical illustration of this formula is shown in Fig. 3.

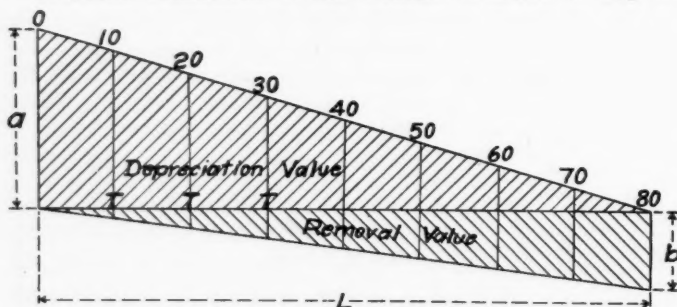


Fig. 3.

a = maximum interest.

b = minimum interest.

L = life in years.

T = time in use in years.

Note a and b are here treated as whole numbers.

#### ROLLING STOCK.

The engines of a railway are usually of various types and classes each of which are designed for a special service. These are purchased or built as required and at many different times. Their life of usefulness varies according to construction and service. Each engine is under more or less constant repair and partial renewal until its condition as a whole is reduced below the limit of usefulness, when it is knocked down to scrap or sold as second hand material. Then the engines of any railway using a large number are in every condition between new engines and engines worn out, and their value is the average between their total gross cost value new and their total net selling value as old material.

Cars are also purchased or built in installments and of many kinds and classes. They pass through the same varied course of deterioration according to service as do engines. And the value of a large number of cars in use on an old

road is the average between the gross cost value new and the net scrap value of wreckage, cost of wrecking being considered, or

$$\frac{a + b + c}{2} \text{ in which}$$

a = gross cost value.

b = net value of wreckage.

c = cost of wrecking.

Graphical illustration is given in Fig. 4.

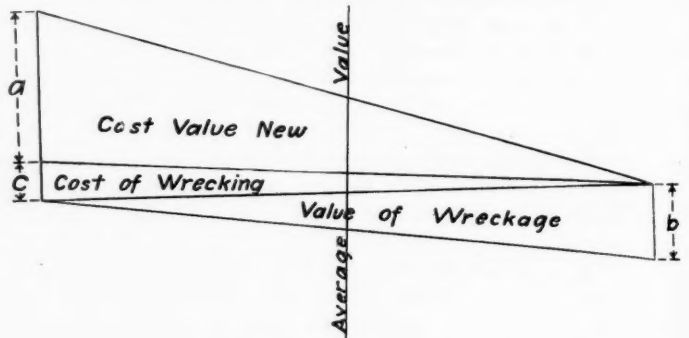


Fig. 4.

In the foregoing articles specific valuations have been dealt with in such a manner as to be applicable to a short line of railway or section of railway.

But in the valuation of a trunk line or system of roads for the purpose of assessment such detailed valuation is not necessary. The depreciation of railway lines which have been in use thirty years or more is practically uniform. This statement comprehends all improvements within the right of way along the line of road subject to depreciation, but does not include special outlying improvements, such as general office buildings or special terminal properties, neither does it include land values.

The writer has made surveys and valuations of over 1,100 miles of railway in New York state and New Jersey. Certain sections of these surveys were made with special care in every detail. Selecting seven of these sections on three separate railways, the gross cost values, and net depreciated values were summed up separately, and the percentage of net value to cost value determined for each section. The total variation from minimum percentage to maximum percentage was  $4\frac{1}{2}$  per cent. The lines selected included single-track and double-track roads; the latter having long stretches of third and fourth tracks. The double-track roads were equipped with all of the latest improvements and had within the sections considered a number of steel bridges on each road. The single-track roads had no steel bridges and only the usual scant improvements of secondary lines. One of these lines had, however, several large stone arched culverts and under-crossings.

A uniform depreciation of alignment properties is a natural sequence to the uniformity in general of the principal items of construction of railroads, and the uniform general depreciation of these items.

Then, having determined the cost value of the alignment properties of any railway or system of roads, the net depreciated value may be determined within 3 per cent. more or 3 per cent. less by applying the uniform percentage of depreciation, then adding to the product the value of lands and special structures.

In addition to the elements of cost above considered, there are many properties of considerable aggregate value which enter into the total value of a finished railway; such as water works, signal apparatus, telegraph and telephone, grade crossings, fencing, culverts, pipes, gas and power plants, and workshops with machinery. All of which are subject to correct commercial valuation, at any stage of life.



## General News Section.

The management of the Colorado & Southern has decided to install as soon as practicable station-to-station block signaling.

The New York, New Haven & Hartford is preparing to use telephones for train despatching on the Northampton division for a distance of about 77 miles.

D. T. Simpson, prosecuting attorney of Holmes county, Ohio, has suits before the circuit court at Millersburg, Ohio, aiming to destroy the relief department of the Pennsylvania and its controlled lines in Ohio.

W. B. Gridley, employed by citizens to examine the accounts of the street railways in Detroit, Mich., finds that the average cost of carrying each passenger during the past year was 3.79 cents, which amounts to a verdict against a reduction of fares to 3 cents.

The Post Office Department has forbidden the New York, New Haven & Hartford Railroad to weigh the mails carried on its lines. It appears that, beginning on the first of this month, the company has been weighing all of the mails, independent of the government weighers.

The Pennsylvania has put on a second exclusive mail train from New York to St. Louis. It leaves New York at 2:50 p.m. The Pennsylvania now takes mail to St. Louis by three 24-hour trains daily, the others starting from New York at 2:45 a.m. and 6:30 p.m., the latter being the new passenger train which began running on November 7.

Charles L. Warriner, former local treasurer of the Cleveland, Cincinnati, Chicago & St. Louis, was, on November 15, indicted on charges of embezzlement and grand larceny. The indictments refer to a loss of \$5,000; but, as was explained in an item published last week, the total amount of thefts from the railway treasury is \$643,000 or more.

The Missouri Pacific has put on a fast mail train from St. Louis to Kansas City which is to be a western connection of the Pennsylvania's new train. It leaves St. Louis at 2 p. m., 24 minutes after the arrival of the train on the Pennsylvania, and reaches Kansas City at 9:15 p. m., where connections are made for points in the West and Southwest. The Pennsylvania cars run through to Kansas City.

Newspapers have published reports that the Pennsylvania Lines Southwest would build a large new repair shop at Richmond, Ind., thus concentrating there the Grand Rapids & Indiana work, that from Bradford, Ohio, and a portion of the repairs from Logansport. We are advised by a motive power officer of that system that the Pennsylvania is not building new shops at Richmond, and that no announcement has been made which would justify the report.

The apportionment of the cost of the proposed grade separation work at Grand Crossing, Ill., is to be decided by a board of arbitrators. E. W. McKenna, second vice-president of the Chicago, Milwaukee & St. Paul; A. W. Sullivan, general manager of the Missouri Pacific; Darius Miller, first vice-president of the Chicago, Burlington & Quincy, and J. W. Kendrick, vice-president of the Atchison, Topeka & Santa Fe, are to serve on the board, together with a fifth man to be chosen by them.

A press despatch from Austin, November 4, says that the Texas State Railroad Commission has issued an order requiring the Katy Limited of the Missouri, Kansas & Texas, to observe the 30-minute rule of the commission. Under this rule the train will have to wait at junctions 30 minutes for connections when necessary. This rescinds the order of the commission of November 11, when, on application of the company, the commission exempted this particular train from the operation of the rule.

The reports in circulation about demands which railway employees intend to make for increases in wages are literally "too numerous to mention." The only formal demands that we have

been able to identify are those by the switchmen at Chicago, who asked for an increase of 5 cents an hour, and by the firemen on the west of Chicago lines for increases amounting to from 20 to 25 per cent. Officers of the Switchmen's Union met at Wilkesbarre, Pa., this week and voted to proceed at once with negotiations to secure higher wages. According to the newspaper reports, a demand will be made for an increase of rates from 26 cents an hour to 35 cents an hour, equal to an increase of 72 cents for an eight-hour day.

### New York Central Pensions.

The pension plan adopted by the New York Central and briefly announced last week (page 945), to go into effect January 1, will be extended without delay to other principal lines of the system, including the Pittsburgh & Lake Erie, so that altogether about 100,000 employees will be affected. Eighteen hundred men will retire on pensions and younger men take their places when the plan goes into effect.

The rules provide that employees reaching the age of 70 years shall be retired. If they have been continuously in the service for 10 years they will be entitled to a pension. If 20 years in service and unfit for duty an employee may be retired with a pension, although he has not reached the age of 70. The rates will be similar to those of the Pennsylvania, 1 per cent. of salary for each year of continuous service, based on the average salary for the last 10 years. The Pension Board will consist of J. Carstensen, A. H. Smith, C. D. Schaff and A. H. Harris, vice-presidents; R. H. L'Hommiedieu, general manager (Michigan Central); J. F. Deems, general superintendent of motive power; D. C. Moon, general manager (Lake Shore), and J. Q. Van Winkle, general manager (C., C. & St. L.).

### Sale of Western Union Control.

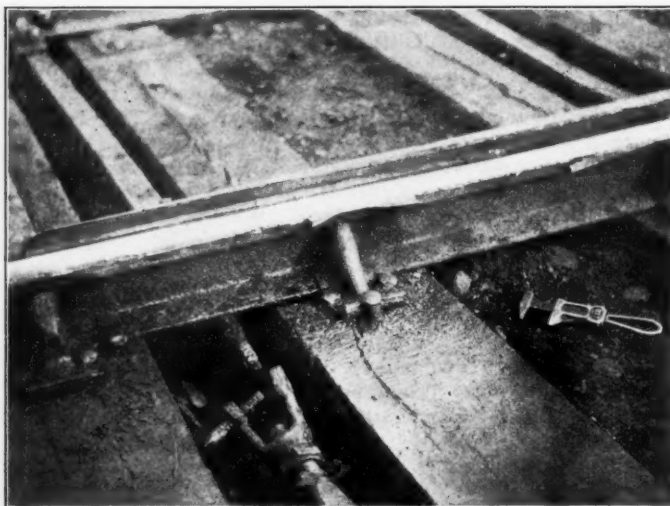
The American Telephone & Telegraph Co., in the control of which the Postal Telegraph Co. has a large interest, has bought a "substantial minority interest" in the stock of the Western Union Telegraph Co. Part of this block of stock bought by the American Telephone & Telegraph Co. was formerly held in the Jay Gould estate, and George Gould has confirmed the sale of a large part of the Gould holdings of Western Union. This apparently means that there will not only be a closer working relation between the Bell telephone companies and the Western Union, but that the Postal Telegraph Co., which in times past has been a bitter rival of the Western Union, will now operate in harmony with the Western Union.

### Brotherhoods Oppose Electrification in Chicago.

The Chicago branches of the Brotherhood of Locomotive Engineers, the Brotherhood of Firemen and Enginemen, the Brotherhood of Railroad Trainmen and the Order of Railway Conductors held a joint meeting on November 11 and adopted resolutions opposing the electrification of railway terminals in Chicago. The resolutions declare that the substitution of electricity for steam would increase the already hazardous occupation of train operation; doubt the sincerity of those who drafted the ordinance for electrification and "absolutely and unequivocally denounce this proposed ordinance as being detrimental and dangerous both to the public generally and to us as employees in actual train operation." George J. Spencer, representing the firemen, who recently visited the New York Central and the New Haven electric zones, has given a statement to the press in which he says that 2,522 cases of shocks and burns and 24 deaths caused by electricity on these roads have been reported to the brotherhood, and that 64 per cent. of the firemen originally employed on the New York terminals of these roads have lost their places. Crews, he says, have been cut from six to three men in a train and wages have been reduced from \$3.60 to \$2.15 a day.

**Malicious Derailment at Willoughby, Ohio.**

The picture of the wreck of a passenger train shown on this page is one of a number taken immediately after a disaster which occurred at Willoughby, Ohio, on the New York, Chicago & St. Louis, on the night of November 5. The notable thing about this wreck is the unusually helter-skelter situation in which the cars were lodged after they left the track, coupled with the remarkably small number of injuries to persons. The train consisted of seven cars, and the passenger cars were well filled, yet only 18 persons are reported injured, and the accounts seem to indicate that 12 of the injuries were slight. This immunity seems to be attributable to the strength of the cars and to the fact that after leaving the track they ran some distance through soft earth, the surface of which was level and practically at the same height as the track. The cause of the derailment was malicious misplacement of a switch. The way in which this was made possible is clearly shown in the first of our two engravings. The nut which was taken off the rod was found lying on the ground, as shown in the picture, as was the wrench. The wrench was of an unknown type, unfinished, with no marks except 1E, supposed to be an assembling mark. The stand was left in position and the light therefore showed "all right" to the approaching engine. The train was running about 50 miles an hour and was on the siding before the engineman

**Cause.**

*Derailment at Willoughby, Ohio, on the New York, Chicago & St. Louis, November 5, 1909.*

knew that anything was wrong. Before he could apply the air the engine had crashed into a box car standing on the side track. The tender rode up over the engine and a box car and smashed the roof of a sawmill. The engine fell on its side. Flames burst forth from the ruins of the cab. The baggage car, immediately behind the tender, turned to the right and, shooting past the locomotive, plowed its way through the sawmill. The two coaches next in the rear of the baggage car were thrown in positions side by side at right angles to the track and partly into a grist mill. The three cars were buried beneath the debris of the two mills and the tons of sawdust and grain which they contained. The remaining cars were derailed but not overturned. Of the 175 passengers aboard the train 18 were injured, the most serious injury being that of the baggagemaster, who sustained a broken leg.

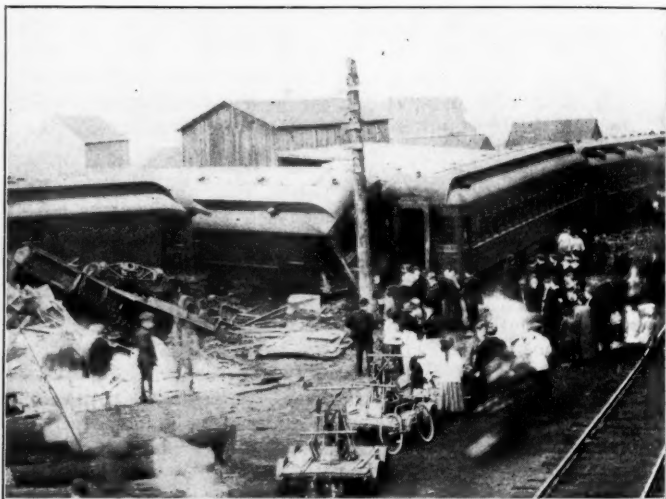
**Fourteen Passengers Killed at Vancouver, B. C.**

According to a press despatch of November 10 a collision between a freight car and a crowded passenger car on the British Columbia Electric Railway Company's suburban line between Vancouver and Westminster, B. C., resulted in the death of 14 persons, including the conductor and the motorman of the freight car. The passengers were mostly working men, and besides the killed seven were injured, two probably fatally. The freight car had become uncontrollable on a grade.

**Indiana Railway Convention.**

The second annual convention of the Indiana Railway Commission and of officers and employees of railways in that state was held in Indianapolis on November 11. The afternoon session consisted really of two conventions, one, composed of superintendents, being presided over by William J. Wood, chairman of the commission, and the other, composed of railway employees, being presided over by Commissioner Henry M. Dowling.

The meeting of superintendents gave most attention to means for reducing trespassing. The members of the commission told of their efforts and failure to get the legislature to pass a law against trespassing. On motion of Commissioner John F. McClure it was decided to appoint a committee of superintendents to investigate carefully all fatal accidents during the year, giving especial attention to those resulting from trespassing, and to report at the next annual convention on some practical method of stopping trespassing. Mr. Wood announced that the commission has about decided to modify its order of several weeks ago regarding lateral clearances. The order provided that everything should be kept at least 18 in. from the outside of the widest cars, but it was represented that this would make a number of roads tear out valuable freight stations, and the commission was asked to so modify its order that the minimum clearance should be 5½ in.

**Effect.**

It was contended that there would be less danger with a narrow clearance than with one in which a trainman might think he had room to take refuge when a train was approaching. Chairman Wood referred to the decrease in accidents to passengers and employees which he attributed to the joint efforts of the commission and railway officers. He stated that after July 1, 1910, the commission would deal severely with roads that had not installed block signals on lines where they are required by law and by orders of the commission.

In the meeting of conductors and engineers several engineers criticised the arrangement of derails at grade crossings.

**American Society of Mechanical Engineers.**

The thirtieth annual meeting will be held in the Engineering Societies building, 29 West Thirty-ninth street, New York, December 7 to 10. William D. Hoxie is chairman of the entertainment committee. For Wednesday afternoon, December 8, an excursion is planned which members and guests will be asked to attend in a body, and during the balance of the time there will be opportunities for smaller parties to visit places of interest. In the evening there will be a lecture on Agricultural Machinery.

The papers for the meeting are as follows: Tests on a Venturi Meter for Boiler Feed, Charles M. Allen; The Pitot Tube as a Steam Meter, George F. Gebhardt; Efficiency Tests of Steam Nozzles, F. H. Sibley and T. S. Kemble; An Electric



Gas Meter, C. C. Thomas; Tan Bark as a Boiler Fuel, David M. Myers; Cooling Towers for Steam and Gas Power Plants, J. R. Bibbins; Some Studies in Rolling Mill Engines, W. P. Caine; An Experience with Leaky Vertical Fire Tube Boilers and the Best Form of Longitudinal Joint for Boilers, F. W. Dean; Testing Suction Gas Producers with a Koerting Ejector, C. M. Garland and A. P. Kratz; Bituminous Gas Producer, J. R. Bibbins; The Bucyrus Locomotive Pile Driver, Walter Ferris; Line-Shaft Efficiency, Mechanical and Economic, Henry Hess; Pump Valves and Valve Areas and a Report on Cast-Iron Test Bars, A. F. Nagle. In addition, there will be several reports submitted by committees of the gas power section.

#### M. C. B. and M. M. Conventions.

The following committee appointments have been made in connection with the 1910 conventions of the Master Car Builders' and American Railway Master Mechanics' associations to be held in Atlantic City, N. J., next June:

**Finance.**—W. H. Miner, The W. H. Miner Co., Chicago, chairman; Albert C. Ashton, Ashton Valve Co., Boston, Mass., and A. G. Langston, Jenkins Bros., Atlanta, Ga.

**Exhibit.**—B. E. D. Stafford, Flannery Bolt Co., Pittsburgh, Pa., chairman; Charles P. Storrs, Storrs Mica Co., Owego, N. Y., and S. P. Bush, Buckeye Steel Castings Co., Columbus, Ohio.

**Badge.**—A. L. Whipple, Whipple Supply Co., New York, chairman; Charles P. Storrs, Storrs Mica Co., Owego, N. Y., and J. Will Johnson, Pyle-National Electric Headlight Co., Chicago.

**Entertainment.**—J. Will Johnson, Pyle-National Electric Headlight Co., Chicago, chairman.

**Transportation.**—Lucian C. Brown, Ralston Steel Car Co., New York, chairman.

**Enrolment.**—W. W. Rosser, The T. H. Symington Co., Chicago, chairman.

The chairmen of the Entertainment, Transportation and Enrolment committees have not yet named their assistants.

#### American Society of Civil Engineers.

At the meeting held on November 17 two papers were presented for discussion, as follows: The Outlet Control of Little Bear Valley Reservoir, by F. E. Trask, M. Am. Soc. C. E., and Water Supply for the Lock Canal at Panama, by Julio F. Sorzano, M. Am. Soc. C. E. Mr. Trask's paper was printed in *Proceedings* for September, and Mr. Sorzano's was printed in *Proceedings* for October, 1909.

#### Southern & Southwestern Railway Club.

At the meeting on November 18 papers were presented on: Oil Lamps, by J. T. Bunn; How Many Million Dollars per Annum Can American Railroads Save in Damage to Freight Cars and Contents by Permitting Switch Men to Adopt Passenger Practice in Handling Equipment, by Messrs. Mathis, Emerson and Poole; and Front and Draft Arrangements, illustrated, by James T. Downing.

#### State Railway Commissioners.

The twenty-sixth annual convention of state railway commissioners was held in Washington this week, Martin S. Decker, of New York, president of the association, in the chair. Mr. Decker in his address urged the need for a thorough inquiry into methods of tariff construction and announcement of rates, with a view of simplifying the tariffs. Shippers are supposed to read tariffs understandingly, and conformity thereto is required; but, in fact, they rarely read them and are generally forced to rely, often with damaging result, upon rate quotations supplied by railway agents. He suggested the appointment of a standing committee on simplification of tariffs, to conduct a thorough inquiry upon which to base a report to the next convention. A. H. Smith, vice-president of the New York Central & Hudson River, gave an address on safety in railway operation, and Commissioner E. E. Clark

presented a report on uniform classification of freight. Mr. Clark said that uniform classification would be a failure unless the state commissions and the carriers gave the project support. Commissioner Gothlin, of Ohio, objected to giving the Interstate Commerce Commission extensive power, but his proposals were voted down by a large majority. Commissioner Clark, chairman of the committee, said that in the Southern classification 65 per cent. of the items are exceptions and 35 per cent. are regular. Commissioner Franklin K. Lane read the report of his committee proposing uniform demurrage regulations throughout the country. He said: "Demurrage rules are used to no small extent as a means by which favored shippers secure unlawful concessions. In some sections of the country where the failure to enforce demurrage rules has been particularly notorious, the railways are carrying on their books at the present time uncollected demurrage charges in the amount of hundreds of thousands of dollars."

#### MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

**AIR BRAKE ASSOCIATION.**—F. M. Nellis, 53 State St., Boston, Mass.; May 10-13; Indianapolis.  
**AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.**—A. G. Thomason, Scranton, Pa. June, 1910; Niagara Falls, Ont.  
**AMERICAN ASSOC. OF LOCAL FREIGHT AGENTS' ASS'NS.**—G. W. Dennison, Penna. Co., Toledo, Ohio.  
**AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.**—R. W. Pope, 33 West 39th St., New York; second Friday in month; New York.  
**AMERICAN RAILWAY ASSOCIATION.**—W. F. Allen, 24 Park Place, New York.  
**AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.**—S. F. Patterson, B. & M., Concord, N. H.  
**AMERICAN RAILWAY ENGINEERING AND MAINT. OF WAY ASSOC.**—E. H. Fritch, Monadnock Bldg., Chicago, March 14-17, 1910; Chicago.  
**AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.**—G. L. Stewart, St. L. S. W. Ry., St. Louis; second Tuesday, May; Memphis, Tenn.  
**AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.**—J. W. Taylor, Old Colony Building, Chicago; June 20-22; Atlantic City.  
**AMERICAN SOCIETY FOR TESTING MATERIALS.**—Prof. Edgar Marburg, Univ. of Pa., Philadelphia.  
**AMERICAN SOCIETY OF CIVIL ENGINEERS.**—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and August; New York.  
**AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Calvin W. Rice, 29 W. 39th St., N. Y.; 2d Tues. in month; annual, Dec. 7-10; New York.  
**AMERICAN STREET AND INTERURBAN RAILWAY ASSOCIATION.**—B. V. Swenson, 29 W. 39th St., New York.  
**ASSOCIATION OF AM. RY. ACCOUNTING OFFICERS.**—C. G. Phillips, 143 Dearborn St., Chicago; June 29, 1910; Colorado Springs.  
**ASSOCIATION OF RAILWAY CLAIM AGENTS.**—E. H. Hemus, A. T. & S. F. Topeka, Kan.; May; Nashville, Tenn.  
**ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.**—P. W. Drew, Wisconsin Central Ry., Chicago. May 16-20, 1910; Los Angeles.  
**ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.**—G. P. Conard, 24 Park Place, N. Y. Dec. 14-15; Chattanooga.  
**CANADIAN RAILWAY CLUB.**—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.  
**CANADIAN SOCIETY OF CIVIL ENGINEERS.**—Clement H. McLeod, Montreal, Que.; irregular, usually weekly; Montreal.  
**CENTRAL RAILWAY CLUB.**—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.  
**FREIGHT CLAIM ASSOCIATION.**—Warren P. Taylor, Rich., Fred. & Pot. R. R. Richmond, Va. June 15, 1910, California.  
**INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.**—Harry D. Vought, 95 Liberty St., New York.  
**INTERNATIONAL RAILWAY FUEL ASSOCIATION.**—D. B. Sebastian, La Salle St. Station, Chicago; May; Chicago.  
**INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.**—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.; May; Cincinnati.  
**IOWA RAILWAY CLUB.**—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.  
**MASTER CAR BUILDERS' ASSOCIATION.**—J. W. Taylor, Old Colony Bldg., Chicago; June 15-17; Atlantic City.  
**NEW ENGLAND RAILROAD CLUB.**—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tues. in month, ex. June, July, Aug. and Sept.; Boston.  
**NEW YORK RAILROAD CLUB.**—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.  
**NORTH-WEST RAILWAY CLUB.**—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d Mon., ex. June, July, August; St. Paul and Minn.  
**RAILWAY CLUB OF PITTSBURGH.**—J. D. Conway, Pittsburgh, Pa.; 4th Friday in month, except June, July and August; Pittsburgh.  
**RAILWAY SIGNAL ASSOCIATION.**—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.  
**RAILWAY STOREKEEPERS' ASSOCIATION.**—J. P. Murphy, Box C, Collinwood, Ohio; May 16-18; St. Louis.  
**ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.**—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.  
**ST. LOUIS RAILWAY CLUB.**—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.  
**SOCIETY OF RAILWAY FINANCIAL OFFICERS.**—C. Norquist, Chicago.  
**SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.**—J. H. O'Donnell, Bogalusa, La.  
**SOUTHERN AND SOUTHWESTERN RY. CLUB.**—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., April, Aug. and Nov.; Atlanta.  
**TRAVELING ENGINEERS' ASSOCIATION.**—W. O. Thompson, N. Y. C. & H. R. R. R., East Buffalo, N. Y.  
**WESTERN CANADA RAILWAY CLUB.**—W. H. Rosevear, 199 Chestnut St., Winnipeg; 2d Mon., ex. June, July and Aug.; Winnipeg.  
**WESTERN RAILWAY CLUB.**—J. W. Taylor, Old Colony Bldg., Chicago; 3d Tuesday each month, except June, July and August; Chicago.  
**WESTERN SOCIETY OF ENGINEERS.**—J. H. Warder, Monadnock Bldg., Chicago; 1st Wednesday, except July and August; Chicago.

## Traffic News.

The railway commission of the state of Washington has ordered the rate on pig iron from the Pacific coast to Spokane, Wash., to be reduced from \$6.50 to \$3.50 a gross ton.

By the establishment of a car ferry across Puget Sound from Everett to Port Ludlow, the Chicago, Milwaukee & Puget Sound has entered the field for traffic of the Olympic peninsula.

It has been decided by the railways interested to make a general reduction in freight rates from Galveston to Denver. The first-class rate at present is \$2.05. It will be reduced to \$1.80.

The Mallory and the Clyde steamship lines have issued a joint notice that beginning December 1 they will have regular weekly sailings of vessels from Boston to Galveston. The steamships will start on Wednesdays, and will call at Charleston and Jacksonville.

Representatives of the trunk line railways had a meeting in New York City last week and once more "settled" the differences between the Boston & Maine, on the one hand, and the lines from Philadelphia and Baltimore, on the other, relating to freight rates on goods imported from Europe and sent westward.

For New Year's and Christmas excursions the western roads have decided to make rates of a fare and a third for the round trip in states where the legal rate is 3 cents a mile, and rates of a fare and a half in states where the legal rate is 2 cents a mile. Last year no special rates were made in states where the legal rate was 2 cents.

Announcement is made that through freight trains over the Denver & Rio Grande and the Western Pacific between Denver and San Francisco will begin running on December 1. On the same date through freight service will be established from St. Louis and the East to San Francisco over these roads via the Missouri Pacific and Pueblo. It is understood that through passenger trains will begin running between Denver and San Francisco January 1.

It is announced by the provincial government at Victoria, B. C., that a contract has been made by the government with MacKenzie & Mann for putting four passenger steamers on the Pacific ocean between British Columbia and Asia (Japan and China), and four others to run to Australia. That arrangements had been made for the establishment of steamship lines when the Canadian Northern Railway shall have reached the Pacific coast was announced by MacKenzie & Mann a week or two since.

The Georgia state railway commission has under consideration, following a hearing just held, the question of a revision of the rates on cotton from interior points to the ports of the state, the question of differential rates on compressed and "soft" cotton, and also of a general revision of rates on cotton. The hearing was on complaint of the Milledgeville Compress Company against the Central of Georgia. The railways were represented at the hearing, but most of the evidence seemed to favor the railway side of the case. The carriers declared that the present was not an opportune time for revision of cotton rates. There is no good reason for any differential in the rates as between compressed and soft cotton. Both the Savannah and the Augusta cotton exchanges appeared and opposed any change in the present methods of handling cotton or any revision of the existing rates.

J. M. Ewen, chairman of the Chicago Harbor Commission, in an address before the City Club of Chicago on November 11, said that the advocates of a deep waterway to the Gulf have given too little thought to the matter of terminal facilities. He said that the principal causes of the disappearance of traffic from the Mississippi river are the lack of proper terminal facilities and failure to secure co-operation of the railways. The waterway champions who are going to send a delegation of 500 to Washington would do well to send the delegates equipped with definite plans for terminal improve-

ments as well as for expenditures in deepening waterways. At present, he said, the Mississippi river in depth and width of channel is a better waterway than most of the rivers of Germany which have a large traffic, but New Orleans is the only city on the river with anything like adequate terminal facilities. At most of the river towns wharves are inadequate and facilities for handling goods are primitive in the extreme.

### Railway Ticket Protective Bureau.

The Railway Ticket Protective Bureau has issued the following report of its work during the past ten months:

Through legal procedure, ticket scalping has been practically eliminated from Buffalo, Niagara Falls, Syracuse, Detroit and New York City, and violations of injunctive decrees have also been successfully prosecuted at San Antonio, Tex.; Seattle, Denver, Toledo, St. Louis, Chicago and Cleveland.

While the hundreds of established ticket brokers' shops heretofore existing and thriving in principal cities have, with a few minor exceptions, been permanently closed, an inconsequential business in short-distance, local, week-end or so-called Sunday excursion tickets is being carried on, which, by reason of its continual variation in personnel, the Bureau is finding difficulty in stopping. A systematic espionage is being maintained which should in the end ensure definite results.

The accomplishments of the Bureau for 10 months are as follows:

At San Antonio, Texas, notwithstanding permanent injunctions, two scalping shops were opened last winter by former scalpers, namely, Seth Testard, William Strittmater and H. Bowden. Testard and Strittmater were each fined \$100 and sentenced to jail for three days. Testard was also indicted and prosecuted for perjury, but, on trial, acquitted. He was also prosecuted and acquitted for violation of a city ordinance prohibiting ticket scalping. This resulted in both abandoning the business. While this eliminated public ticket scalping, it is not improbable that "curbstone" and newspaper scalping is carried on in San Antonio during winter months owing to the volume of tourist traffic.

At Denver, Colo., notwithstanding that every effort was made by scalpers to secure licenses to operate, no sanctions were granted, due to the intervention of the Bureau. Several endeavored to operate through the medium of newspaper advertisements, but were promptly arrested and fined. Unfortunately, the decision of the United States Court of Appeals, to which appeal was taken a year since in injunctive proceedings instituted in Federal Circuit Court, has not been rendered, and, perforce, tentatively holds further effort in abeyance. A federal court indictment was obtained involving a former Denver scalper on charge of aiding and abetting unlawful use of interstate free transportation. This charge failed, being dismissed on demurrer, owing to no service having been rendered on the pass.

At New York City, Buffalo, Niagara Falls, Syracuse and Rochester, both state and federal court injunctions were secured, except in Rochester, where ticket scalping was suppressed through the efforts of the Chamber of Commerce. Although injunctions were secured in Buffalo and Niagara Falls, the scalpers still continued to operate, and it became necessary to broaden the decrees to include "all tickets sold at a reduced rate and which by their terms are non-transferable, whether signature form or otherwise." A vigorous campaign, with prosecutions and convictions, followed, resulting in the scalpers abandoning the field. During the state fair, held at Syracuse, state court injunctions were secured and the aid of the police department elicited, with the result that for the first time in the history of the New York state fair the scalper was not in evidence. Only one scalper maintains an office in New York City, and it is believed that when grants of additional injunctions, on applications pending, are made he will, of necessity, retire.

At Toledo, Ohio, the injunctions secured were similarly broadened, to include all tickets sold at reduced rates; notwithstanding, several itinerant scalpers opened temporary offices during carnival week. Citations were obtained for



REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF SEPTEMBER, 1909.  
(See also issues of November 5 and 12.)

Name of road.	Mileage operated at end of period.	Operating revenues			Maintenance of way and structures, equipment			Trans- portation.	General.	Total.	Net operating revenues (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) comp. with last year.
		Freight.	Passenger.	Total.	Inc. misc.	Way and structures.	Equipment.								
Alabama & Vicksburg .....	143	\$88,036	\$37,698	\$125,734	\$22,971	\$22,971	\$22,987	\$3,588	\$3,181	\$100,310	\$34,826	.....	\$4,750	\$30,076	\$16,054
Alabama Great Southern .....	309	217,123	85,126	302,249	97,717	97,717	92,983	9,421	8,098	241,594	87,480	.....	11,236	75,943	967
Ann Arbor .....	301	92,355	46,968	139,323	22,510	22,510	19,795	4,719	3,996	99,170	52,770	.....	12,331	46,023	5,774
Central New England .....	294	201,586	36,620	238,206	37,487	37,487	20,220	69,283	2,593	133,160	117,820	.....	6,500	109,320	26,906
Chicago, Cincinnati & Louisville .....	284	108,455	31,859	140,314	25,080	25,080	23,912	8,461	6,527	126,672	10,593	.....	3,405	16,188	20,245
Chicago, Indianapolis & Southern .....	341	249,966	24,825	274,791	51,006	51,006	46,867	9,071	8,206	205,244	77,248	.....	12,500	64,921	14,364
Chicago, Indianapolis & Louisville .....	616	358,928	139,824	498,752	87,703	87,703	68,871	13,131	14,012	317,643	221,060	.....	25,833	91,060	63,305
Cincinnati, Hamilton & Dayton .....	1,036	607,478	179,035	786,513	129,126	129,126	142,219	20,921	16,864	585,094	250,952	.....	25,833	254,139	73,808
Cincinnati, New Orleans & Texas Pac. .....	337	593,156	152,999	746,155	194,429	194,429	143,889	18,191	16,864	480,850	273,519	.....	20,000	253,886	78,108
Cincinnati, Northern .....	218	167,603	53,561	221,164	38,404	38,404	32,900	8,126	2,807	138,226	41,356	.....	4,100	37,256	8,106
Cleveland, Akron & Columbus .....	1,582	1,675,272	723,170	2,398,442	262,917	262,917	236,210	32,555	3,338	1,870,778	78,359	.....	5,000	89,856	169,563
Cleveland, Cincinnati, Chicago & St. L. .....	1,382	1,643,842	43,958	1,687,800	251,323	251,323	236,210	15,113	42,040	1,883,376	934,914	.....	74,000	869,856	169,563
Colorado Midland .....	441	123,362	17,836	141,198	34,351	34,351	33,172	78,345	5,248	175,190	56,133	.....	9,350	46,872	7,280
Detroit, Toledo & Ironton .....	594	196,105	99,635	295,740	30,119	30,119	21,375	3,669	4,127	120,664	31,462	.....	6,510	24,844	726
Duluth, South Shore & Atlantic .....	310	146,163	714,868	861,031	146,163	146,163	100,963	8,084	4,787	190,160	120,342	.....	10,446	106,388	49,012
Evansville & Terre Haute .....	336	292,770	190,700	483,470	64,970	64,970	52,589	5,728	6,266	122,775	97,738	.....	8,872	88,103	20,061
Grand Trunk Western .....	538	248,193	56,032	304,225	51,181	51,181	42,146	25,322	8,974	335,482	102,282	.....	7,410	150,428	10,106
Iowa Central .....	175	194,305	30,840	225,145	51,521	51,521	42,146	9,933	3,985	160,984	68,398	.....	10,446	61,488	7,752
Kanawha & Michigan .....	886	398,455	93,758	492,213	75,209	75,209	67,181	14,222	9,205	333,389	183,106	.....	18,271	164,834	87,314
Lake Erie & Western .....	1,511	2,772,319	1,058,590	3,830,909	576,643	576,643	509,870	103,168	59,743	2,510,033	1,758,995	.....	125,000	1,628,619	432,202
Lake Shore & Michigan Southern .....	1,918	1,116,798	48,037	1,164,835	14,414	14,414	21,774	5,128	6,666	91,634	81,925	.....	5,000	77,311	14,384
Louisiana Western .....	1,746	1,624,693	714,868	2,339,561	375,750	375,750	313,557	87,858	33,975	1,608,990	948,826	.....	1,971	94,000	85,255
Missouri Central .....	3,883	1,716,062	485,365	2,201,427	336,478	336,478	289,219	56,667	57,711	1,659,838	755,487	.....	2,434	80,401	67,262
Missouri Pacific .....	3,588	2,593,305	83,750	2,677,055	365,770	365,770	313,557	52,218	12,987	2,363,292	1,04,680	.....	16,000	84,859	20,512
Morgans La. & Tex. R.R. & S.S. Co. ....	196	207,754	51,788	259,542	281,694	281,694	259,501	8,764	10,248	194,332	87,362	.....	9,500	77,862	14,860
New Orleans & North Eastern .....	3,587	4,787,352	3,110,590	7,897,942	877,235	877,235	779,820	198,380	157,771	5,676,820	3,102,415	.....	336,237	2,788,978	625,669
New York Central & Hudson River .....	151	164,137	58,048	222,185	242,713	242,713	218,115	88,241	5,508	152,546	90,167	.....	11,317	71,041	8,001
Peoria & Eastern .....	351	207,305	72,631	279,936	32,260	32,260	29,817	5,333	6,360	191,336	109,599	.....	8,800	100,799	8,877
Philadelphia & Reading .....	1,024	2,846,556	623,813	3,470,369	481,617	481,617	420,594	39,804	54,887	2,763,327	1,534,774	.....	73,327	1,483,095	301,842
Pittsburgh & Lake Erie .....	191	1,364,852	129,587	1,494,439	153,377	153,377	139,653	14,567	291,320	1,243,057	958,515	.....	17,000	941,326	273,348
Rutland .....	468	142,409	129,807	272,216	301,245	301,245	243,995	7,041	6,098	267,264	118,483	.....	10,004	108,479	659
St. Louis, Iron Mt. & Southern .....	2,610	1,612,793	471,569	2,084,362	313,288	313,288	248,514	54,426	62,510	1,419,262	829,289	.....	75,366	750,562	186,907
Seaboard Air Line .....	2,603	1,030,239	283,106	1,313,345	193,652	193,652	200,902	49,297	52,442	940,388	499,068	.....	53,000	444,425	154,523
Toledo & Ohio Central .....	441	308,692	73,856	382,548	51,261	51,261	44,185	6,510	7,939	231,456	167,196	.....	13,886	163,048	61,643
Vicksburg, Shreveport & Pacific .....	171	74,477	39,689	114,166	122,872	122,872	108,947	3,553	4,157	87,282	35,590	.....	6,500	29,090	9,607

THREE MONTHS OF FISCAL YEAR 1910.															Increase (or dec.) comp. with last year.
		\$69,561	\$117,157	\$291,224	\$61,030	\$10,672	\$124,807	\$15,266	\$281,336	\$99,888		\$12,750	\$87,138	\$40,609	
Alabama & Vicksburg .....	143	\$237,664	\$117,157	\$291,224	\$61,030	\$10,672	\$124,807	\$15,266	\$281,336	\$99,888	.....	\$12,750	\$87,138	\$40,609	
Alabama Great Southern .....	309	557,404	277,190	844,594	263,462	25,975	265,768	26,603	672,443	241,931	.....	33,708	206,934	10,780	
Ann Arbor .....	301	260,258	154,735	414,993	42,994	13,755	151,268	12,751	293,281	151,437	.....	36,992	132,221	12,241	
Central New England .....	294	92,355	46,968	139,323	22,510	19,795	4,719	3,996	99,170	52,770	.....	19,500	279,628	122,847	
Chicago, Cincinnati & Louisville .....	284	285,771	103,626	389,397	126,312	60,875	26,775	17,786	350,065	56,374	.....	10,215	46,159	70,268	
Chicago, Indianapolis & Southern .....	341	1,094,342	80,290	1,174,632	162,841	27,644	267,536	23,600	626,771	192,867	.....	37,500	555,989	67,856	
Chicago, Indianapolis & Louisville .....	616	1,004,332	426,595	1,430,927	214,454	39,232	385,633	44,662	946,332	610,903	.....	60,000	550,903	146,585	
Cincinnati, Hamilton & Dayton .....	1,036	1,670,986	525,123	2,196,109	417,732	93,120	585,039	99,447	1,830,973	619,652	.....	77,500	542,152	100,783	
Cincinnati, New Orleans & Texas Pac. ....	337	1,589,089	395,658	1,984,747	337,635	53,900	581,846	52,518	1,340,582	106,241	.....	60,000	687,568	124,108	
Cincinnati, Northern .....	248	240,914	74,899	315,813	59,062	9,166	95,884	7,529	225,509	106,241	.....	12,300	93,941	10,241	
Cleveland, Akron & Columbus .....	175	194,305	30,840	225,145	51,521	3,006	95,884	1,529	225,509	106,241	.....	12,300	93,941	10,241	
Cleveland, Cincinnati, Chicago & St. L. ....	1,582	4,677,218	2,219,136	7,311,086	886,381	146,318	1,086,292	131,134	4,867,104	2,673,320	.....	222,000	2,445,009	386,630	
Colorado Midland .....	337	408,852	139,327	623,513	93,008	30,093	101,935	13,340	426,722	130,251	.....	28,050	160,588	33,614	
Detroit, Toledo & Ironton .....	431	329,349	99,069	406,633	101,935	30,093	101,935	13,340	426,722	130,251	.....	28,050	160,588	33,614	
Duluth, South Shore & Atlantic .....	394	566,134	271,951	804,176	159,337	26,454	300,610	22,140	591,233	312,858	.....	19,531	60,253	3,603	
Evansville, St. Terre Haute .....	310	416,030	171,351	645,349	72,732	26,454	300,610	22,140	591,233	312,858	.....	19,531	60,253	3,603	
Grand Trunk Western .....	236	870,201	266,021	1,135,350	176,021	70,662	177,010	20,524	355,977	289,372	.....	26,616	260,904	50,901	
Iowa Central .....	558	636,512	169,495	804,537	120,224	23,021	520,046	26,881	629,204	522,294	.....	87,570	435,131	29,543	
Kanawha & Michigan .....	175	580,785	88,307	681,589	133,727	6,671	160,341	11,421	445,696	221,333	.....	22,224	189,109	30,447	
Lake Erie & Western .....	886	1,052,110	280,843	1,404,616	179,126	40,808	459,135	30,977	983,962	420,854	.....	54,814	365,840	52,741	
Lake Shore & Michigan Southern .....	1,511	1,935,789	3,205,306	4,286,003	1,780,191	304,114	3,346,821	176,887	7,787,767	5,207,236	.....	375,000	4,813,430	1,061,329	
Louisiana Western .....	198	313,334	146,403	483,468	72,329	16,419	125,827	20,405	282,172	200,676	.....	15,000	186,451	33,460	
Michigan Central .....	1,746	4,470,447	2,148,842	7,252,567	1,040,799	94,930	2,364,847	121,984	4,691,586	2,559,981	.....	1,211	2,573,770	508,095	
Missouri Pacific .....	3,883	3,029,334	844,983	4,257,676	572,138	94,980	2,450,235	100,527	6,892,499	3,946,177	.....	1,344	1,908,116	208,095	
Morgans La. & Tex. R.R. & S.S. Co. ....	358	684,320	233,689	919,009	149,838	29,181	373,718	38,086	751,441	254,262	.....	48,000	205,489	36,748	
New Orleans & North Eastern .....	196	567,892	153,689	776,616	81,001	25,981	276,799	29,080	542,079	234,357	.....	25,100	209,347	34,748	
New York Central & Hudson River .....	3,587	13,353,946	9,108,276	24,333,955	3,511,854	666,572	8,105,011	158,466	16,599,205	8,334,750	.....	29,247	1,082,732	44,082	
Peoria & Eastern .....	151	401,122	180,211	645,792	99,385	62,177	234,912	12,080	412,943	232,542	.....	7,281	124,151	1,241,151	
Philadelphia & Reading .....	1,024	2,846,556	623,813	3,470,369	481,617	16,727	276,682	16,135	529,330	302,673	.....	26,400	188,326	15,569	
Pittsburgh & Lake Erie .....	191	3,930,272	414,928	4,345,202	881,581	118,989	2,897,092	176,247	6,312,349	3,807,333	.....	267,673	3,615,109	300,103	
Rutland .....	468	422,766	373,184	882,371	374,653	44,039	837,689	60,958	1,730,021	722,081	.....	2,671,047	944,796	944,796	
St. Louis, Iron Mt. & Southern .....	2,610	1,612,793	471,569	2,084,362	313,288	20,030	275,700	15,815	545,110	337,266	.....	51,000	367,509	46,713	
Seaboard Air Line .....	2,603	4,451,914	1,380,542	6,004,073	939,998	162,174	1,890,365	199,183	4,263,272	2,000,801	.....	226,098	1,763,698	169,307	
Toledo & Ohio Central .....	441	308,692	73,856	382,548	51,261	156,116	568,045	156,116	7,205,579	1,244,083	.....	159,000	1,079,708	370,283	
Vicksburg, Shreveport & Pacific .....	171	74,477	39,689	114,166	122,872	17,607	321,460	19,255	692,233	429,281	.....	27,720	416,086	151,809	
.....	.....	.....	.....	.....	.....	63,993	98,165	12,404	238,134	99,060	.....	18,900	77,160	11,276	

\* Includes Central Branch Ry., consolidated with Missouri Pacific Ry. and Branches, August 9, 1909. † For period August 9 to September 30, 1909. — Indicates deficits, Losses and Decreases.

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their appearance in court, but they fled the jurisdiction of the court. Several successful convictions were made in Cleveland during the summer, and street scalping of Sunday excursion tickets was reduced to a minimum.

A determined attempt was made by three old-time scalpers to re-establish their business in St. Louis last summer, one operating in the guise of a steamship agent. Evidence was secured and arrests and prosecutions followed. All of the scalpers were found guilty and fined from \$200 to \$300, and in one instance a jail sentence of twenty days was imposed, resulting in the scalpers abandoning the field.

Inasmuch as some injunctions issued from both state and federal courts prior to those granted during the period treated of by this report were limited by the courts to cover only non-transferable signature forms of tickets, it follows that other styles of tickets, both one-way and excursion, official, employee or stock passes, and good-to-bearer mileage tickets are open to manipulation in the territory in which such limited injunctions are in force, and a minority of the scalpers have endeavored to continue their business by openly dealing in these forms of transportation and secretly in prohibited forms when reasonably sure they were negotiating with bona fide purchasers. To fully and permanently realize the reformation made possible by the courts it is absolutely essential that all issues of reduced rate tickets be of signature or non-transferable contract forms, which by their terms require the purchaser to sign, such requirement bringing the ticket under the ban of many of the earlier injunctions above referred to, even though in the case of week-end and special excursion tickets from local points the signing of all the tickets is not exacted because impracticable. If this recommendation, and it is urgently advanced, should meet with uniform acceptance, it would greatly simplify and assure early and definite completion of the duty deputed to the officers of the Bureau, namely, entire and final elimination of railway ticket scalping.

#### Advance in Lemon Rates Defended by George T. Nicholson.

George T. Nicholson, vice-president in charge of traffic of the Atchison, Topeka & Santa Fe, has written the following letter to the *Chicago Record-Herald*, in defense of the action of the railways in advancing rates on lemons from California to the East:

"An editorial headed 'The Lemon Growers and the Railways,' which appeared in your Sunday issue, expresses your doubt as to the equity of the recent advance in the freight rate on lemons from California to eastern markets, and quotes from 'a paper which expresses the sentiments of the growers' a strenuous protest against the advance and a prediction that it is likely to reverse our national policy of tariff protection for American industries.

"A brief statement of the facts in the case will, I think, convince you and your readers that the railways have fostered this industry during its youthful struggles and have repeatedly come to its rescue during periods of price depression. Now that the necessity for such assistance no longer exists the discrimination in freight rates in favor of lemons and against oranges should cease and the carriers should receive a fair return for their services.

"Originally, the freight rate on all citrus fruits was the same—\$1.25 per 100 lbs.—from California to eastern markets. In 1902 the lemon growers asked for a lower rate during the winter months as a necessary aid in selling during the season of the year when the market is glutted with imported lemons and when prices are lowest. The railways complied by granting a reduced rate of \$1 for the winter and spring months of 1902-3, the tariffs stating this to be 'a winter relief rate.' After this period the regular tariff rate of \$1.25 was restored. The reduction was requested and granted under a distinct understanding with the principal growers and shippers that it was an emergency rate and a needed contribution by the railways toward the cost of establishing the industry. There was no contention that under normal conditions lemons should carry a lower freight rate than oranges.

"During the following winter of 1903-4 the \$1 'winter relief rate' was again asked for and granted, and in the following

summer the regular rate was again restored. In the fall of 1904 the lemon growers and packers urged that this relief rate be made an all-the-year-round rate because the continued depressed condition of the California lemon industry had reached such a stage that many orchards were cut down and budded over to oranges.

"As on previous occasions, this aid from the railways was not asked on the ground that the freight rate on lemons should be less than on oranges under normal conditions, or that the rate was excessive, but wholly on the ground that the railways should grant this temporary assistance in their own interest as carriers and as partners of the lemon growers in producing and transporting this transcontinental freight. The railways again complied, giving notice, however, that the reduction was of a temporary nature, subject to restoration at any time it was found to be no longer necessary.

"The time has come when it is no longer necessary. The lemon industry is now profitable and the import duty has been increased 50 cents per 100 lbs. There is no equity in longer carrying a lower rate on lemons than on oranges. The railways have therefore advanced the rate to the same figure as charged on oranges—which, by the way, is now \$1.15 instead of \$1.25 per 100 lbs.

"Railways are entitled to fair compensation for their services. The \$1 rate is not a fair compensation. Good service is of far more importance to the producer and shipper of fruit than is an extremely low rate. Unprofitable rates result in poor service. Good service calls for the purchase and maintenance of refrigerator cars, which are more expensive and less serviceable for general purposes than ordinary box cars; it calls for the concentration of such cars in large numbers at shipping points in California, which often means empty movement west-bound in train lots for 2,000 miles distance; it means faster time schedules for the movement of this perishable freight than is given freight of any other description; it means an expensive organization to look after refrigeration and care of the fruit, and for diverting shipments en route from one market to another in order to secure best distribution and best prices. No other class of freight business is so expensive to handle.

"The paper from which you quote expresses the fear that this advance in freight rate is likely to overturn our national policy of tariff protection of American industries, and gives voice to the despairing cry, 'Help for a struggling industry is the claim; help for an exacting servant of that industry is the result.' Congress has added 50 cents per 100 lbs. to the import tariff on lemons, and the railways have added but 15 cents per 100 lbs. to their emergency freight rate, not for the greedy purpose of profiting by the tariff increase—as is claimed—but wholly because they are at this time fully warranted in doing so under the terms of their original understanding with the interested parties.

"If there be occasion for the alarm quoted in your editorial, it will not be chargeable to this just freight rate revision, nor to any voluntary act of the railways. Their record proves them to be the steadfast friends of this industry."

#### National Industrial Traffic League.

The annual meeting of the National Industrial Traffic League was held in Chicago on November 11 and 12. J. C. Lincoln, Commissioner of the Traffic Bureau of the Merchants' League of St. Louis, was re-elected president and W. E. Cooke, traffic manager of the Automatic Electric Company, Chicago, was re-elected secretary. The reports showed that the League now has a membership of 163, of whom 92 represent individual concerns and 71 associations of shippers. The officers have begun a compilation of the number of constituent members of the various associations having representation in the League. The 29 associations that have answered inquiries have a total membership of 25,622 firms and individuals. It was decided to appoint a committee to present to the Interstate Commerce Commission the shippers' reasons for favoring the order that where a shipper asks for a small car and a large one is supplied by the railway the railway shall be required to apply the minimum weight of the smaller car.

The committee on rate construction stated that the report



submitted by it at Charlevoix, Mich., in favor of the alternative rule regarding rates contemplated in Rule 7 of Interstate Commerce Commission Circular 15 A, has been placed in the hands of all the railway traffic associations, and some of the associations and individual carriers agreed to adopt it. There remain, however, many lines to be conferred with and each member of the League was requested to call on the carriers in his district regarding this matter. The committee on rate construction was unable to agree upon a uniform basis of minimum charge for all classification territories, and it recommended that when members of the association doing business only within one classification territory find the rule in that territory unfair and unsatisfactory they shall create a committee to deal with it, leaving it a local proposition.

The committee on the responsibility of carriers for tariffs quoted decisions of the Interstate Commerce Commission of the Wisconsin Railway Commission, and of the Supreme Court of the United States on this subject. It said:

"(a) The Interstate Commerce Commission states that every shipper may with safety rely upon the lawfulness of the carrier's rates, without fear that they will be withdrawn as illegal after he has made shipment thereon, resting in the confidence that they were lawful as long as they were in force.

"(b) The Wisconsin commission (and the underlying intent of the Wisconsin law and the interstate commerce law is usually the same) held that when the railway had not complied with the law as to publicity (posting) of the rates, the shipper could not be held for the payment of a tariff rate not posted and of which he had no knowledge.

"(c) The position of the Interstate Commerce Commission is that where questions may arise of the lawful rates because of tariffs not being posted at given points, the records of the Commission are sufficient to determine the lawful rate; that in contested cases the shipper should pay the lawful rate via the route the shipment moves, and then file claim for refund if he believes he has been overcharged. It is apparent that the final word has not yet been said on the subject of the lawfulness of unposted rates.

"In view of all the facts, it would seem that all that can be done with this subject at this time is to leave it as an unfinished matter on the docket and wait for some case to be decided by the court of final resort."

The freight claims committee reported that during the past year no complaints of any consequence of aggravated delay on the part of railways in settlement of overcharge claims have been received, and it is believed that there has been a marked improvement in this particular. It is recommended that in cases of serious delay in settlement of overcharge claims they be taken up with the chief traffic officers of the railway at fault, as the committee was confident that traffic officers of all railways are fully alive to the importance of prompt adjustments of claims. It called attention to the plan adopted by the Rock Island lines, the St. Louis & San Francisco, and the Fort Worth & Rio Grande, under which revising clerks in the auditing departments of these roads, when they discover an overcharge in billing, promptly fill out a formal blank voucher setting forth the details, which they send at once to the delivering agent, or, if a prepaid item, to the forwarding agent, with instructions for immediate settlement on surrender of original expense bill or original bill of lading. This arrangement, the committee said, is working out in a most satisfactory manner for all concerned.

The report set forth what had been done to secure the co-operation of the railways in obtaining the issuance of more legible expense bills. This matter had been taken up with the Freight Claim Association, with the General Managers' Association of the Southeast, and with the American Railway Association. The most important result was a conference at the office of H. C. Barlow in Chicago on October 19 and 20, which was attended for the shippers by O. F. Bell, F. B. Montgomery, J. C. Maddison, and H. C. Barlow, and for the railways by E. B. Boyd, Arthur Hale and C. Heyward Drayton. This joint committee recommended to the American Railway Association and to the National Industrial Traffic League a code of instructions be issued to all railways for use in receiving freight and in furnishing freight bills at destination, and recommended that all shippers be requested to comply with the same.

The report was referred to the executive committee of the League with authority, upon advice from the American Rail-

way Association of its acceptance and promulgation by that body, to promulgate it to all members of the League.

A resolution was adopted recommending that the bills of lading bill, recommended by the Commissioners on Uniform State Laws at their annual conference in Detroit in August, 1909, be enacted in every state and territory.

Resolutions were adopted favoring legislation to prohibit express companies from engaging in mercantile business.

### COURT NEWS.

The suit of the state of Michigan against the Michigan Central Railroad for back taxes amounting to \$4,000,000 is now on trial at Lansing. The company has brought a countersuit against the state in Wayne county.

On application of Joseph Call, attorney for the lemon growers of southern California, Judge Morrow, of the United States circuit court, has issued a temporary injunction restraining the Southern Pacific, the San Pedro, Los Angeles & Salt Lake and the Atchison, Topeka & Santa Fe from raising their rates on lemons from California to the east.

Judge Sanborn, of the United States circuit court, on November 15 entered an order at St. Paul, Minn., allowing A. B. Stickney and Charles H. F. Smith, formerly receivers of the Chicago Great Western, about one-half of the amounts they asked for as compensation for their work. They asked for \$50,000 a year each. The court allowed Mr. Stickney \$24,584 for 359 days' work and Mr. Smith \$42,000, which was a proportionate compensation for the longer time he served.

The supreme court of the United States this week handed down a decision sustaining the validity of the Federal Employers' Liability Law of 1906, so far as it applies to the Territories and the District of Columbia. Last year this law was declared unconstitutional, so far as it applies to territory other than that above named; but as the act has since been amended so as to exclude cases which arise in intrastate commerce, the effect of the present decision is believed to be practically an affirmation of the validity of the whole act, as it now stands.

The attorney-general of Texas has appealed to the state supreme court the case of the State versus the Trinity & Brazos Valley and the Missouri, Kansas & Texas. The Railway Commission ordered the Trinity & Brazos Valley to take freight and passengers between Dallas and Waxahachie, where it operates over the tracks of the Missouri, Kansas & Texas under a contract. The order of the Railway Commission, in effect, required the Trinity & Brazos Valley to disregard its contract. The court of civil appeals held that it could not do so and that the order of the Railway Commission was null.

The federal court at Tacoma, Wash., has released from escrow the deposits by the lumber shippers in the Pacific coast lumber rate cases. It will be recalled that the railways in November, 1907, sought to advance their rates and that the shippers got out injunctions. The circuit court required the shippers to make a cash deposit with which to pay the higher rates in case they were held reasonable. The Interstate Commerce Commission held the advanced rates excessive but permitted the roads to make certain advances, and, therefore, the court released to the Northern Pacific, the Great Northern and the Bellingham Bay & British Columbia \$343,342, this being the amount in excess of the original charges which the shippers should have paid, during the litigation, on the basis of the rates fixed by the commission as reasonable. At the same time the court released \$83,000 to various members of the Pacific Coast Lumber Manufacturers' Association and the Shingles Mills Bureau, and ordered a \$250,000 group bond reduced to \$5,000 and a contingent group bond of \$70,000, made on April 20, 1908, reduced to \$5,000. It is estimated that if the railways had won their case the difference in their freight charges while the litigation was pending, between the rates formerly in effect and the rates which the railways sought to fix would have been \$1,500,000. It is, therefore, estimated that on the basis of the commission's decision the shippers saved, while the litigation was pending, the difference between the \$343,342, which is now paid to the railways, and \$1,500,000. Some small amounts still remain unsettled, which accounts for the retention of small parts of the money

in escrow. While the railways have applied the rates fixed by the commission, they have appealed from its decision to the courts.

Judge William C. Hook, of the United States circuit court, has overruled the plea in abatement entered by the attorney-general of Oklahoma in the suit of the railways in that state to restrain the officers of the state from enforcing the 2-cent fare constitutional provision and the freight rate orders of the Corporation Commission. The state sought to have the case thrown out of court because the railways, instead of exhausting their remedies in the state courts, appealed to the United States circuit court. The state relied upon the decision of the United States supreme court in the Virginia rate case as a precedent. Judge Hook held, however, that the Virginia case was not a precedent because in the Virginia case the rates fixed by the corporation commission and complained of by the railways had not been in effect, while the Oklahoma rates were in effect and were complained of by the railways as confiscatory. He said: "Complainants did not invoke the jurisdiction of the commission, as authorized by the constitution, but brought suit after some experience with the rates prescribed. It cannot be assumed that the commission would fail to have given them the relief if they were entitled to it, but the question is whether they should have first gone there before bringing these suits or were absolutely required to seek their remedy in the commission and the supreme court of the state, as tribunals of exclusive jurisdiction. The doctrine of the Virginia case does not apply, because the prescription of passenger rate had passed the legislative stage and had become a complete rule of action. The constitutional provision fixing the 2 cent fare is not different from an act of the legislature and committing to some tribunal a determination of their reasonableness. When the jurisdiction of a court of the United States is invoked upon sufficient grounds it cannot be relieved of its duty to take cognizance and proceed, either by a constitutional provision or by legislative act of the state. The test is the existence of a controversy and its character and the presence of grounds of federal jurisdiction, not whether the courts of a state are open, or to what extent."

The government's air-brake suits against the Baltimore & Ohio under the safety appliance acts, commonly known as the "Sand Patch" cases, came up before United States District Judge Orr at Pittsburgh last week, and, as was announced in our issue of November 12, page 931, the government was nonsuited.

A correspondent writes: "The government's contentions in these suits were that under no circumstances could hand-brakes be used in the control of trains; that non-air cars, or cars with defective air-brakes, could not be transported in trains although not associated with the required percentage of air-braked cars; and that the railway company, in permitting hand-brakes to be used in connection with the required 75 per cent. of air-braked cars regulating the speed of freight trains on the steep Sand Patch grade near Cumberland, was violating the law. In granting the non-suit Judge Orr said:

"First.—While the act required that the railway company, after January 8, 1908, should not use in interstate traffic any train that had not a sufficient number of cars in it so equipped with power or train-brakes that the engineer could control its speed without requiring brakemen to use common hand-brakes for that purpose, yet as the act in plain words does not prohibit the brakemen from using hand-brakes, an action of this character, which was brought for enforcement of a penalty, cannot be sustained.

"Second.—That while the act requires the railway company to operate its trains with not less than 75 per cent. of its cars in such train equipped with air-brakes, and while the act further provides that all power-brake cars in the train which are associated together with the said 75 per cent. of air brake cars, should have such brakes used and operated, yet if the evidence showed that 75 per cent. of the cars were equipped with air-brakes, the act does not require that the other 25 per cent. of cars shall be also equipped with hand-brakes, and the use of defective air-brakes or air-brakes on the cars and not in operation may, therefore, be counted as part of the 25 per cent. of non air-brake cars."

## Railroad Officers.

### ELECTIONS AND APPOINTMENTS.

#### Executive, Financial and Legal Officers.

A. J. Davidson, president of the St. Louis & San Francisco, with office at St. Louis, Mo., has resigned.

E. M. Devereux has been elected assistant secretary of the Pere Marquette, with office in New York, N. Y.

A. G. Cochran, vice-president and general solicitor of the Missouri Pacific-Iron Mountain system at St. Louis, Mo., has resigned.

L. S. Taylor has been elected treasurer of the Pullman Co., succeeding K. Demmler, retired. Mr. Demmler has been in the service of the company for 30 years.

T. M. Schumacher, general traffic manager of the El Paso & Southwestern, at Chicago, has been elected a vice-president of the Western Pacific and the Denver & Rio Grande, in charge of traffic, with office at San Francisco, Cal., effective December 1.

The Missouri & Kansas Interurban has been reorganized with the following officers: W. B. Strang, president; A. F. Hunt, Jr., vice-president; W. A. McLaughlin, secretary and treasurer, and Thomas Reilly, general manager, with offices at Kansas City, Mo.

Henry C. Nutt, whose election as fourth vice-president of the Northern Pacific and general manager of the lines west of Paradise, Mont., with office at Tacoma, Wash., has been



Henry C. Nutt.

announced in these columns, was born November 12, 1863, at Council Bluffs, Iowa. He graduated from Sheffield Scientific School in 1883 and began railway work in August of that year as roadman with the Burlington & Missouri river in Nebraska, now a part of the Chicago, Burlington & Quincy. He served in various capacities in the engineering department, and in 1889 was made trainmaster, with office at Alliance, Neb. In 1892 he was appointed assistant superintendent at Edgemont, S. Dak., and a year later was transferred to Sheridan, Wyo. In 1900 he became assistant superintendent of the Iowa lines of the Chicago, Burlington & Quincy at Burlington, Iowa, which position he held three years. He was then promoted to superintendent and a year later to general superintendent of the Iowa district. In 1905 he was transferred to the Missouri district and the next year was appointed general superintendent of the Michigan Central at Detroit, Mich. He was appointed general manager of the Northern Pacific lines west of Trout Creek, Mont., in 1907, from which position he was recently promoted.

#### Operating Officers.

A. V. Brown has been appointed superintendent of the Montana division of the Northern Pacific, with office at Livingston, Mont., succeeding C. L. Nichols, promoted.

H. G. Clark, district engineer of the Chicago, Rock Island & Pacific at Little Rock, Ark., has been appointed trainmaster on the Arkansas division, with office at Little Rock.

W. F. Perdue, instructor in standard rules on the Chicago & Alton, has been appointed instructor in standard rules on the Chicago Great Western, with office at Chicago.



F. Walker has been appointed a superintendent of the Canadian Pacific, with office at Nelson, B. C. J. A. McGregor, superintendent at Souris, Man., has been transferred to Brandon.

W. R. Armstrong, acting superintendent of the Montana division of the Oregon Short Line, has been appointed superintendent, with office at Pocatello, Idaho, succeeding H. G. Olmstead, deceased.

G. W. Vanderslice has been appointed superintendent of the Western division of the Chicago Great Western, with office at Clarion, Iowa, succeeding A. E. Harvey, assigned to special work in the engineering department.

H. H. Allison, trainmaster of the Monterey-Tampico line of the National Railway of Mexico at Monterey, Nuevo Leon, Mex., has been appointed superintendent of the Gomez-Palacio division. J. J. McCune, chief dispatcher at Monterey, succeeds Mr. Allison.

The Hine system of organization, having been established on the Salt Lake division of the Southern Pacific lines east of Sparks, Nev., the titles of master mechanic, trainmaster, travelling engineer and chief dispatcher have been abolished and the following officers will hereafter be designated as assistant superintendent: Thomas Fitzgerald, T. F. Rowlands, D. J. Malone, B. A. Campbell, W. J. Toy and W. J. Stinson, all with offices at Ogden, Utah; D. Hickey, H. L. Bell and T. A. McKinstry, with offices at Sparks, Nev., and F. W. Easton, with office at Imlay, Nev.

Joseph Restein, assistant trainmaster of the New York, Philadelphia & Norfolk, has been appointed a trainmaster, with office at Cape Charles, Va., succeeding A. G. Manahan; Harry D. Renninger succeeds Mr. Restein, with office at Delmar, Del. U. F. White has been appointed assistant supervisor, with the same authority, and performs the same duties as supervisor. J. D. King, chief clerk, has been appointed division operator and in addition will have charge of the train dispatchers, station agents and baggage agents. I. J. Burbage succeeds Mr. King, all with offices at Cape Charles, Va.

The Hine system of organization having been established on the Montana and the Idaho divisions of the Oregon Short Line, the titles of division engineer, trainmaster, master mechanic, traveling engineer and chief dispatcher have been abolished and the following officers will hereafter be designated as assistant superintendent: On the Montana division, H. A. Roberts, W. J. Ingling, T. M. Jackman, C. P. A. Loneragan and F. W. Rothas, all with offices at Pocatello, Idaho. On the Idaho division, C. E. Brooks, A. H. Gairns, W. S. Harer, E. M. Jacobs, G. J. Cunningham, J. H. Woffington, J. D. Rayle and G. H. Collier, all with offices at Pocatello; J. P. Folger and J. E. Davis, with offices at Nampa, Idaho, and C. J. Husted and L. E. Halbert, with offices at Kemerer, Wyo.

#### Traffic Officers.

H. G. Locke has been appointed a traveling passenger agent of the Chicago Great Western, with office at Boston, Mass.

Robert F. Britton, rate clerk of the St. Louis Southwestern at Shreveport, La., has been appointed a commercial agent, with office at Texarkana, Ark.

R. M. Bacheller, commercial agent of the Atchison, Topeka & Santa Fe at St. Joseph, Mo., has been appointed division freight agent, with office at St. Joseph.

J. R. McGregor has been appointed a traveling passenger agent of the Rock Island-Frisco system, with office at Nashville, Tenn., succeeding Paul S. Weaver, transferred to Cincinnati.

C. C. Cameron, general freight agent of the Illinois Central at Chicago, has been appointed coal traffic manager, with office at Chicago, succeeding F. H. Harwood, resigned to engage in other business.

George A. Gamble, agent of the Lehigh Valley and the Lehigh Valley Transportation Co., at Kansas City, Mo., has been appointed manager of the Pere Marquette-Lehigh Valley Fast Freight Line, with office at Buffalo, N. Y., succeeding F.

A. Butterworth, resigned, to become assistant general freight agent of the Pere Marquette. F. H. Briggs succeeds Mr. Gamble.

G. F. Herr, passenger and freight agent of the Union Pacific at Los Angeles, Cal., has been appointed general agent of the El Paso Southwestern, with office at San Francisco, Cal., succeeding C. K. Junkins, resigned to accept service elsewhere.

J. H. Lord, passenger agent of the Illinois Central at Springfield, Ill., has been appointed to the new position of district passenger agent, with office at Springfield. He will have jurisdiction over the line from Springfield to St. Louis, from Springfield to Peoria and all contiguous territory.

W. J. Tremaine, commercial agent of the Vicksburg, Shreveport & Pacific, has been appointed a commercial agent of the Queen & Crescent, with office at Cincinnati. E. S. Morgan, traveling freight agent at Dallas, succeeds Mr. Tremaine, and L. R. Gardner, soliciting agent at Dallas, succeeds Mr. Morgan.

Charles S. Wight has been appointed general traffic manager of the Baltimore & Ohio, as previously announced in these columns. His former position of manager freight traf-



Charles S. Wight.

fic, as well as the position of the late D. B. Martin as manager passenger traffic have been abolished. Mr. Wight is in charge of both freight and passenger traffic; C. W. Bassett, general passenger agent east, and B. N. Austin, general passenger agent west, reporting direct to him. Mr. Wight was born August 9, 1849, at Galena, Ill. He began railway work in October, 1866, as messenger in the Cincinnati, Ohio, freight office of the Little Miami, now part of the Pittsburgh, Cincinnati, Chicago & St. Louis, and later became a clerk for the People's Despatch, in the same city. In 1878 he was appointed west-bound agent of the Continental Line. He was made assistant general freight agent of the Trans-Ohio divisions of the Baltimore & Ohio at Baltimore, Md., January 1, 1880, and was later transferred to Columbus, remaining at that place until March 15, 1888, when he became general freight agent, with office at Pittsburgh, Pa. He was appointed manager freight traffic of the Baltimore & Ohio system March 15, 1896.

J. F. Auch, general freight agent of the Philadelphia & Reading at Philadelphia, Pa., has been appointed assistant manager of the Philadelphia & Reading and subsidiary companies. R. L. Russell, assistant general freight agent at Philadelphia, succeeds Mr. Auch. E. B. Crosley, coal freight agent, has been appointed general coal freight agent, all with offices at Philadelphia.

#### Engineering and Rolling Stock Officers.

C. R. Breck has been appointed chief locating engineer of the Southern Pacific in the state of Jalisco, succeeding R. E. Hardaway.

P. H. Dudley, C.E., Ph.D., has been appointed a consulting engineer of the New York Central lines on rail, tires and structural steel, with office at the Grand Central station, New York.

E. E. Kurtz has been appointed an assistant district engineer of the New York Central & Hudson River, with office at Corning, N. Y., in charge of the territory covered by the Pennsylvania division.

D. D. Colbin, district engineer of the National Railways of Mexico at Guadalajara, Mex., has been appointed chief engineer of the Pan-American, with office at Gamboa. Eduardo Sabathe succeeds Mr. Colbin.

The jurisdiction of James M. Reid, chief engineer of the National Railways of Mexico at Mexico City, which has heretofore been confined to location and construction, has been extended over the department of maintenance of way.

Samuel G. Thomson has been appointed assistant engineer of motive power of the Philadelphia & Reading and subsidiary lines, with office at Reading, Pa. The positions of mechanical engineer and electrical engineer have been abolished.

J. F. Enright, superintendent of machinery of the International & Great Northern at Palestine, Tex., has been appointed superintendent of motive power and car department of the Denver & Rio Grande, with office at Denver, Colo.

Jacob Haas, roadmaster of the Atchison, Topeka & Santa Fe at Dodge City, Kan., has been appointed roadmaster, with office at Hutchinson, Kan. He will have jurisdiction over part of the territory previously in charge of A. West. Edward Marshall succeeds Mr. Haas.

J. W. Small, superintendent motive power of the Southern Pacific of Mexico and the Sonora Railway at Empalme, Sonora, Mex., having resigned, that office is now abolished and all reports previously made to the superintendent of motive power will hereafter be made to R. H. Ingram, assistant general manager at Empalme.

C. F. W. Felt, chief engineer of the Gulf, Colorado & Santa Fe at Galveston, Tex., has been appointed chief engineer of the Atchison, Topeka & Santa Fe, with office at Topeka, Kan., succeeding C. A. Morse, promoted to chief engineer of the entire Santa Fe system. Frank Merritt, division engineer of the Gulf, Colorado & Santa Fe at Cleburne, Tex., succeeds Mr. Felt.

J. G. Neuffer, whose appointment as superintendent of motive power of the Chicago Great Western, with office at Chicago, has been announced in these columns, was born in February, 1854, at Chillicothe, Ohio. He began railway work in May, 1869, as machinist apprentice with the Marietta & Cincinnati, now a part of the Baltimore & Ohio Southwestern, and was later machinist, fireman, engineman and shop foreman. In March, 1890, he was made road foreman of engines of the Baltimore & Ohio Southwestern, and after two years was appointed master mechanic. In December, 1893, he was appointed general master mechanic and superintendent of motive power, which position he held for ten years. He was appointed assistant superintendent of machinery of the Illinois Central in November, 1903, and in May, 1908, was made superintendent of machinery, from which office he resigned a few months ago.

J. E. Snell, superintendent of buildings and docks of the Delaware, Lackawanna & Western at Hoboken, N. J., has resigned to become superintendent of construction with Henry Steers, Inc., New York, and will have charge of work on the New York, Westchester & Boston. His former office has been abolished and the duties divided among other officers. George T. Hand has been appointed to the new position of terminal engineer, with jurisdiction over all bridges, buildings, docks

and engineering matters east of the Hackensack river in New Jersey, as well as the New York and Brooklyn terminals, with office at Hoboken. E. I. Cantine has been appointed division engineer of the main line and branches west of the Hackensack river to Portland, Pa., including the Bangor & Portland, with jurisdiction over all bridges, buildings and engineering matters.

Julius Welch Pfau, whose appointment as engineer of construction of the New York Central & Hudson River at the Grand Central station, New York, in charge of all construction work on main line



Julius W. Pfau.

and branches of the exterior zone, was recently announced in these columns, was born September 18, 1877, at Troy, N. Y. After graduating from the Rensselaer Polytechnic Institute with the degree of civil engineer, he began railway work June 1, 1899, as a rodman attached to an engineering corps of the New York Central & Hudson River at Albany, N. Y. He was appointed assistant engineer in September, 1901, in charge of reconstruction of passenger and freight bridges over the Hudson river at Albany.

The following June he was put in charge of new passenger station and track improvements at Troy, N. Y., and in January, 1903, in charge of the Schenectady detour, comprising 14 miles of new track around the city of Schenectady, including 15 bridges over highways crossed by the new line. In December of the same year he left railway work to become masonry expert of the New York State Barge Canal, in charge of masonry construction, and in May, 1906, returned to the New York Central & Hudson River as engineer of grade crossings, which position he held until his recent appointment.

#### Purchasing Officers.

G. H. Grone, assistant to purchasing agent of the Pennsylvania Railroad, has been appointed an assistant purchasing agent, with office at Philadelphia, Pa.

Walter M. Carroll has been appointed assistant general storekeeper of the Chicago & North Western, with office at Chicago, succeeding W. E. Kappler, resigned to engage in other business.

H. E. Rouse, general storekeeper of the Chicago & Alton at Bloomington, Ill., has been appointed general storekeeper of the Chicago Great Western, with office at Chicago, succeeding H. C. Chandler, resigned.

C. B. Foster, storekeeper of the Toledo, St. Louis & Western at Frankfort, Ind., has been appointed general storekeeper of the Chicago & Alton and the Toledo, St. Louis & Western, with office at Bloomington, Ill., succeeding on the Alton H. E. Rouse, resigned to accept service elsewhere. Mr. Foster's jurisdiction has also been extended over the Iowa Central and the Minneapolis & St. Louis.

#### OBITUARY.

Ransom R. Cable, a director of the Chicago, Rock Island & Pacific, died at Chicago on November 12 at the age of 75 years.

G. H. Olmstead, until recently division superintendent of the Oregon Short Line at Pocatello, Idaho, died at Pocatello on November 6.



# Railroad Construction.

## New Incorporations, Surveys, Etc.

**ABILENE CENTRAL.**—According to press reports from Abilene, Tex., residents of that place have entered into a contract with Morgan Jones for the construction of a 50-mile line from Abilene, easterly towards Rising Star, in Eastland county. Work is to be started at once and finished within 18 months. Residents of Abilene have subscribed \$110,000.

**ALBANY SOUTHERN (ELECTRIC).**—Contract has been given to J. G. White & Co., incorporated, New York, for double-tracking this road between Rensselaer, N. Y., and Kinderhook lake, as well as strengthening curves and the rehabilitation of a large section of the present line. (Oct. 29, p. 827.)

**ALBION INTERURBAN.**—Financial arrangements are said to have been made to build from Burley, Idaho, southeast to Albion, about 15 miles. The line, it is said, will cost about \$250,000 and will open up a rich section, including some mining property. E. J. Hunter, Albion, may be addressed.

**ARIZONA & GULF.**—Plans are said to be made to begin work early next year from Sasabe, Mex., on the international boundary, through the Altar district in the state of Sonora to Port Lobos, on the Gulf of California. The Mexican government some time ago granted a concession to build the line to John Henderson and P. Sandoval, of Nogales, Ariz. (See Mexican Roads, Oct. 29, p. 828.)

**ARIZONA & SWANSEA.**—An officer writes that work was started November 8 and grading has been finished on 16½ miles. The route is from Bouse, Ariz., on the Arizona & California, northeasterly to the Clara Consolidated Gold & Copper Co. mines at Swansea, 22 miles. The work which is being carried out by the railway company for 19 miles is through an open country, and on three miles consists of rock and canyon work. Maximum grades will be 2.60 per cent. and maximum curvature 8 deg. (Nov. 5, p. 894.)

**CANADIAN NORTHERN ONTARIO.**—A sub-contract is said to have been given to Dibona & Orlando Brothers, with office at Trenton, Ont., for the section between Trenton and Brighton, of the line being built from Toronto east to Ottawa. (Nov. 5, p. 894.)

**CANADIAN PACIFIC.**—Application will be made at the next session of the Dominion parliament for permission to build from a point on the Pheasant Hills line at or near Asquith, Sask., north and northwesterly to a point in township 38 or 39, range 10, 11 or 12, about 20 miles.

The Goose Lake branch has been extended from Zealandia, Sask., southward to Rosetown, 11.4 miles.

The Thunder Hill branch has been extended from Benito, Man., westward to Pelly, 16.8 miles.

According to press reports work has been finished on a 35-mile line built under the name of the Northern Colonization Railway, from Nominig, Que., north via Loranger, Hebert, Campeau and Routhier to Duhamel, formerly known as the L'Original Rapids.

This company will apply for an extension of time in which to build the following lines:

From a point at or near Osborne, Man., to a point between Cartwright and Boissevain.

From Otterburne, Man., to Stuartburn.

From Killam, Alb., or some other point in township 44, ranges 13 and 14, west Fourth to Strathcona, with power to commence from a point in range 12.

From a point at or near Napinka, westerly to a junction with the northwest extension of the Souris branch, with power to terminate at or near Griffin, Sask., on the company's Weyburn-Stoughton branch.

From a point in township 22, range 2, east of the principal meridian in a northerly or northwesterly direction to a point in township 34, ranges 5, 6 or 7, west of the principal meridian, about 100 miles.

**CASTLE VALLEY (ELECTRIC).**—Incorporated in Wyoming, with \$100,000 capital, to build from Price, Utah, to Cedar creek canyon. W. C. Rice, president, of Salt Lake City.

**CHICAGO & NORTH WESTERN.**—An officer writes that work is now under way on a cut-off between Thatcher, Neb., and Valentine, 5.73 miles. The work includes the construction of a bridge over the Niobrara river, to be 135 ft. high and 1,300 ft. long. It is expected to have the line finished this year. (Oct. 8, p. 659.)

Surveys have been made for a line from Hitchcock, S. Dak., west, 55 miles, also between Iroquois and Doland, about 40 miles. It is intended to build these lines next year. (Oct. 29, p. 827.)

**CHICAGO, MILWAUKEE & ST. PAUL.**—An officer is quoted as saying that a branch will be built from Fargo, N. D., north to Grand Forks, thence west to Larimore, and again north to Winnipeg, Man. Work is to be started next spring.

**CINCINNATI-BIGBONE INTERURBAN.**—Incorporated in Kentucky to build 25 miles of line, for which right-of-way is secured. The projected route is from Covington, Ky., southwest via Erlanger, Florence, Union and Bigbone springs. The incorporators include: Dr. M. J. Crouch, J. J. Weaver, J. W. Kennedy and A. W. Koch.

**CLEARWATER SHORT LINE.**—See Northern Pacific.

**COLUMBIA RIVER & MOUNT ADAMS.**—Under this name a company is said to have been incorporated in the state of Washington, with \$2,000,000 capital, to build through Klickitat, Yakima and Skamania counties. A. F. Suksdorf is an incorporator.

**DENVER, BOULDER & WESTERN.**—An officer writes that under the reorganization by which this company secured the property formerly owned by the Colorado & Northwestern, \$100,000 of bonds was set aside for extensions, betterments, etc., to be available for such purposes, after January 1, 1910, if so decided by the Board of Directors. Surveys were made for an extension of the present line in Colorado to the mill of the Primos Mining & Milling Co. After surveys were finished it was decided to postpone the construction and definite action may be taken early next spring. This also applies to the proposed extension in Boulder county to Nederland. During 1910 train service may be inaugurated to Nederland over the tracks laid by the Central Colorado Power Co., now in use for construction purposes to their storage reservoir near that place. (Nov. 5, p. 894.)

**ELIZABETHTOWN TERMINAL.**—The New York Public Service Commission, Second district, has granted permission to this company to build from Elizabethtown, N. Y., east to a connection with the Delaware & Hudson at Westport, eight miles, in Essex county. (Nov. 5, p. 894.)

**ERIE.**—The report of this company for the year ended June 30, 1909, under date of October 19, shows that during the year the total number of miles in operation was 2,230.82 miles, and in addition the company controls, but does not operate, 164.54 miles, a total of 2,395.36 miles, of which 894.97 miles, or 37.4 per cent., is second track; 16.32 per cent. third track, and 16.48 per cent. fourth track. There was an increase of 19.42 miles in track owned, due to the construction of the Pen Horn Creek railway from Bergen, N. J., to Fish creek, 1.12 miles; changes in the Newark & Hudson, 2.56 miles; connection built with the Buffalo, Rochester & Pittsburgh at Brockwayville, Pa., 0.75 miles; remeasurement of the Toby branch added 0.73 miles; rearrangement of tracks from Lakewood, N. Y., to Niobe junction, 1.36 miles, and opening of the Columbus & Erie from the New York state line to Columbus, 12.90 miles. There was an increase of 1.64 miles in track controlled due to changes in the New York & Greenwood Lake, to connect with the Pen Horn Creek Railway. There was also an increase of 38.60 miles in trackage rights on account of the tracks of the Erie & Jersey between Highland Mills, N. Y., and Guymard junction. There was an addition of 61.68 miles of new second track constructed at various places on the road during the year. The Erie & Jersey, a low-grade line between Highland Mills, N. Y., and Guymard, with the revision of that portion of the existing road between Highland Mills and Newburgh junction, was partially completed and put in operation early in 1909. The Suffern Railroad has been merged into the Erie & Jersey, and no material progress has been made during the year in the construction of the Suffern line.

Satisfactory progress was made during the year on the construction of the Genesee River Railroad, the low-grade line between Hunts, N. Y., and Cuba, also improving the line between Cuba and Olean, and between Hornell and Hunts. It is expected the work will be finished and the line put in operation early in 1910. Satisfactory progress has also been made on the construction of the Pen Horn Creek, the four-track line through an open cut in Bergen Hill, N. J., connecting the lines west of the present tunnel with the existing tracks east of the tunnel in Jersey City. This will afford access to the Jersey City station over six main tracks. It is expected that the improvement will be finished and the line put in operation early in 1910. A subway connection between the passenger station at Jersey City and the underground station of the Hudson & Manhattan was finished and put in operation in August, 1909.

The New York Public Service Commission, Second District, has issued an order as to the building of crossings in connection with the improvement of the Buffalo division of the Erie, between Hornell, N. Y., and Hunts. The change in grade or alignment of tracks covers a distance of eight miles through the towns of Burns, Portage and Munda. The order provides that the railway company shall do the work in connection with the construction of all crossings at its own expense. The improvements in the town of Burns provide for carrying three highways over the railway tracks on steel bridges and one highway is to pass under the railway tracks, in the towns of Nunda and Portage. One of the existing highways at each place will be carried over the railway tracks on a steel bridge.

**FINDLAY-MARION RAILWAY & LIGHT Co.**—According to press reports from Findlay, Ohio, this company has under consideration the question of building 46 miles of line, which, in connection with existing lines, will connect Columbus with Toledo. It is said that New York capital has been secured and a construction company is to be organized to carry out the work. The estimated cost of the line is \$1,200,000. It will be built over a private right-of-way. G. E. Meeker, of Columbus, Ohio, and H. P. Hankey, Detroit, Mich., are said to be interested.

**GALLATIN VALLEY ELECTRIC.**—This company now has 18 miles of electric line finished in Montana and has engineers in the field locating a 30-mile addition. N. C. Van Natta, chief engineer, Bozeman, Mont.

**GRAND TRUNK PACIFIC.**—An officer writes that track has been laid from Winnipeg, Man., west to the Pembina river in Alberta, 860.5 miles. The steel superstructure of the large bridge over the Pembina river is well under way and is expected to be finished about the middle of December, when track-laying will be resumed. It is the intention to lay track this year west to the mountain section at Wolf creek, 915 miles west of Winnipeg, to which place grading has been finished. Contract has been given to Foley, Welch & Stewart for a section of 179 miles west of Wolf creek and the contractors have supplies stored sufficient for the winter. Grading is about finished on the first 100 miles east from Prince Rupert, on the Pacific coast, and track-laying will be commenced as soon as the steel bridge over the Zanardi rapids, about seven miles east of Prince Rupert, is finished. Foley, Welch & Stewart have the grading contract from a point 100 miles east of Prince Rupert, easterly 135 miles. This work is now under way. The branch line from Melville, Sask., which is to be the second divisional point, has been finished to Balcarres, 35 miles, and northerly to Yorktown, 25 miles. A branch is also under contract from Tofield, Alb., towards Calgary, and track has been laid for about 25 miles. (Oct. 22, p. 777.)

**GREAT NORTHERN.**—The report of this company for the year ended June 30, 1909, shows that the line from Armington, Mont., to a connection with the Northern Pacific and the Chicago, Burlington & Quincy at Laurel, has been finished. The line is 194.53 miles from Armington to Laurel junction, from which point trackage rights have been obtained over the Northern Pacific to Billings, 12.34 miles, and through freight and passenger service was put in operation November 1, 1908.

The extension of the Crow's Nest Southern, from Fernie, B. C., to Michel, 20.98 miles, has also been opened.

The line from Greenbush, Minn., to Warroad, 43.15 miles, which was graded by the Minnesota & Great Northern, has been finished by the Great Northern and opened for traffic.

The new line from Blaine, Wash., to the international boundary, 2.96 miles, has been opened, and the Vancouver, Victoria & Eastern, from a connection at the international boundary to South Westminster, B. C., via Olivers, 21.05 miles, has also been opened. The section from Cloverdale, B. C., to Sumas, 29.29 miles, has been finished and work on the extension from Keremeos to Princeton, 41 miles, has been continued during the year. Grading is finished and 1.5 miles of track has been laid. It is expected to complete the line in 1909. Track-laying was finished on the branch from Vancouver, B. C., to Burrard Inlet, which carries the line into the shipping district of Vancouver, where valuable dock property will shortly be developed.

Work has been begun on an extension from Nashwauk, Minn., to a connection with the main line at La Prairie, 22 miles; track laid on six miles. The branch affords access to the iron ore mines on the western end of the Mesabi range. It is expected to have all the work finished in the fall of 1909.

A branch is being built in Washington from Columbia River station to Mansfield, about 62 miles. Track is laid on 21 miles, and the work is expected to be finished this fall.

A two-mile branch from Spokane, Wash., south to a connection with the Spokane, Portland & Seattle, of which the Great Northern is half owner, includes piercing a tunnel 2,120 ft. long, to be lined with concrete. It is expected to finish this work in December; at which time direct and through train service to Portland, Ore., and Astoria will be inaugurated.

Work has been started on branch lines from Stanley, N. Dak., to Powers Lake, 24 miles; Bainville, Mont., to Plentywood, 52 miles.

At Tacoma, Wash., a large tract of land was bought and a brick freight house, 50 ft. by 565 ft., was put up, also a three-stall engine house with 80-ft. turntable, and other improvements were made. A modern brick passenger station was put up at Everett, Wash., and station improvements made at other places. Improvement work was continued on the line along Puget Sound, 5,411 lineal feet of sea wall was completed between Ballard, Wash., and Everett, and 9.82 miles of second track laid between Mosher, Wash., and Richmond beach. Main tracks have been relaid during the year as follows: 262.27 miles with 90-lb. rail; 12.39 miles with 85-lb. rail; 2.54 miles with 80-lb. rail; 33.88 miles with 75-lb. rail; 116.97 miles with 68-lb. rail, and 18.21 miles with 56-lb. rail, in each case replacing rails of lighter weight—a total of 446.26 miles. Additional sidings and spurs, in addition to those built on new lines, were added on 30.74 miles.

**GUADALAJARA-CHAMELA.**—A concession is said to have been granted several years ago to Anglo-French interests to build in the state of Jalisco, Mex. Arrangements said to be made to build from La Vega, on the Ameca branch of the National Railways of Mexico, in the state of Jalisco, southwest to the Pacific port of Chamela, about 120 miles.

**GULF, TEXAS & WESTERN.**—Application was recently made to the Texas Railroad Commission to allow bonds to be issued on 60 miles of line, 40 of which is finished and in operation between Jacksboro, Tex., and Olney. It is expected that 20 miles additional will be ready soon. The road is now being extended from Olney northwest to Seymour. The company was organized to build from Benjamin, in Knox county, southeast to Burr's Ferry, on the Sabine river, in all about 500 miles. (Aug. 27, p. 383.)

**IDAHO NORTHERN RAILROAD.**—According to press reports work will be started early next spring on two branch lines through mining and timber sections of northern Idaho. One branch is to be built from a point three miles above Enaville, Idaho, at the junction of the present line with the Oregon Railroad & Navigation Co., for 15 miles up the middle north fork of the Coeur d'Alene river, and another branch from the mouth of Beaver creek, on the main line, for 10 miles, into the Sunset mining district.

**INTERCOLONIAL.**—The Indiantown branch has been extended from Indiantown, N. B., to Blackville, nine miles.



**INTERNATIONAL RAILWAY OF NEW BRUNSWICK.**—According to press reports work on this road will soon be finished from Campbellton, N. B., southwest to St. Leonards, on the St. John river. The distance from Baie des Chaleurs to St. John, by the new line, is 114 miles, of which 80 miles has track laid and is ballasted. Grading is about finished on the remaining section. Thomas Malcolm is the contractor. (March 19, p. 660.)

**INVERNESS RAILWAY & COAL CO.**—Train service has been extended on this road from Point Tupper junction, N. S., to Point Tupper, 1.5 miles.

**KANSAS CITY, MEXICO & ORIENT.**—An officer writes that contracts were let in September to Roach & Stansell, of Memphis, Tenn., for work on 28 miles from San Angelo, Tex., southwest to Mertzzen. Grading work is now under way. (Sept. 24, p. 563.)

**KETTLE VALLEY LINES.**—See Spokane & British Columbia.

**LONG ISLAND.**—Extensive improvements have been planned by the Long Island, to be carried out during 1910, to include the following: Extension of double-track on the Oyster Bay branch from Glencove to Locust Valley; double-tracking the Northside division to Great Neck, which is to be electrified from Long Island City to Port Washington; the Long Beach line is also to be electrified; two additional tracks are to be laid from Valley Stream to Lynbrook and one additional track from Springfield to Valley Stream, completing a four-track line from Jamaica to Lynbrook. The work includes four-tracking the main line from Jamaica to Sunny Side yard and to the Pennsylvania tunnel at Long Island City. Part of this will have six tracks and the entire division is to be electrified, as well as the Glendale cut-off, connecting the Rockaway Beach division with the main line, and it is expected to have electric trains in operation by February 1, 1910. At Jamaica the terminal improvements involve an expenditure of \$3,000,000. This includes raising the tracks from Morris Park to Rockaway junction, at the western end of the village of Jamaica, also the reconstruction of the entire passenger arrangement and putting up a new nine-story station. The company has had under consideration for some time but has not yet definitely decided when work will be carried out double-tracking and electrifying the main line and Wading River branch east to Huntington; also the main line to Farmingdale, the Oyster Bay branch to Oyster Bay, and the Montauk division to Babylon.

**LOUISIANA & ARKANSAS.**—Track laying on the extension to Shreveport, La., is expected to be finished by December 1 and trains put in operation before the end of that month. Plans for a passenger and express station at Shreveport, to cost \$50,000, have been approved. The station is to be used jointly with the St. Louis Southwestern. (Oct. 22, p. 777.)

**MANISTEE & NORTH-EASTERN.**—The Manistee river branch has been extended from Buckley, Mich., eastward to Walton, about 15 miles.

**MARIANNA & BLOUNTSTOWN.**—An officer writes that this company was organized to build from Marianna, Fla., south via Blountstown to the Gulf of Mexico, about 70 miles. It is expected to have the section from Marianna to Blountstown, 30 miles, in operation by February, 1910. S. A. Smith, secretary, Marianna.

**MARSHALL & EAST TEXAS.**—This road has been extended from Marshall, Tex., east to Blocker, 10 miles. (Aug. 27, p. 383.)

**MEXICAN ROADS.**—Work is to be started soon on a line from Tezuitlan, Mex., on the InterOceanic Railway northeast to the mouth of Nautla river, on the Gulf coast, about 75 miles.

**MEXICO NORTHWESTERN.**—According to press reports work is now under way on the extension from Terrazas, Chihuahua, southwest via San Diego, thence through the mountains to the San Miguel and up that river to Arroya de Alamos, and across table lands to the pine forests of Madera, about 105 miles. It is said the work will be hurried to completion. A force of about 2,000 men will be at work during the next 30 days. (Oct. 8, p. 661.)

**MISSOURI, OKLAHOMA & GULF.**—This company has put in

operation an extension from Allen, Okla., south to Tupelo, 23 miles. (Oct. 29, p. 828.)

**MONTANA WESTERN.**—This road is now open for business from Conrad, Mont., west to Valier, 19.8 miles. (May 21, p. 1099.)

**NEW YORK SUBWAYS.**—All the contracts for building the first six sections of the subway in the Borough of Brooklyn, from Manhattan bridge to Forty-third street, Bay Ridge, about four miles, have been signed and work is now under way. This is the "Fourth avenue subway," the line being beneath that street for most of the way. (Nov. 5, p. 895.)

**NOOKSACK TRACTION.**—This company, which was organized in the state of Washington to build a network of interurban lines in that state, is said to have sold bonds and work is to be begun soon. Terminal buildings, it is understood, will be put up in Bellingham at a cost of \$30,000. J. E. Morrison is a promoter.

**NORTHERN COLONIZATION.**—See Canadian Pacific.

**NORTHERN EMPIRE.**—Organized to build from a point on the international boundary near Cardstan, Alb., north through Lethbridge, Fort McMurray, Fort Vermillion and the Yukon territory to a point on the international boundary between Yukon and Alaska. A meeting of the promoters is said to have been held recently in Edmonton to arrange for the commencement of construction work. Henry Roy, R. Balfour, J. J. Fleutot and E. Hoffman, all of Edmonton, are the provisional directors.

**NORTHERN PACIFIC.**—Surveys are said to be under way on the Clearwater Short Line, from Kooskia, Idaho, east to Missoula, Mont. Work is under way on the eastern end and it is thought that construction work will be started early next year on the Idaho section. (Oct. 29, p. 828.)

**NORTHWESTERN PACIFIC.**—Press reports from Eureka, Cal., say that contracts for building a section of 30 miles of the gap between Sherwood, Cal., and Shively, will be let by November 20. (Oct. 1, p. 613.)

**OREGON RAILROAD & NAVIGATION CO.**—An officer writes that there is no truth in the reports that the company will pierce a tunnel through the Blue mountains in Oregon and reduce the heavy grades over Telocaset hill.

Surveys are being made for a cut-off from Stanfield, Ore., to Coyote. This is a revision of the Echo-Coyote cut-off improvement work, which was planned several years ago. (Nov. 12, p. 943.)

**REGINA SOUTHERN.**—Application has been made for a charter to build from the international boundary north to Regina, Sask., also for a number of branches. This is supposed to be a Hill project.

**RUTLAND, TOLUCA & NORTHERN.**—Incorporated in Illinois, with \$97,000 capital, to build from Rutland, in La Salle county, Ill., west to Toluca, in Marshall county, thence north to Granville, in Putnam county, 30 miles. The incorporators and directors include: D. A. Moulton, L. E. Gary, N. J. Ford, G. E. Summers and W. H. Botham, all of Chicago.

**SOUTHERN PACIFIC.**—A contract has been given to the Hutchinson Co., of Oakland, Cal., for grading and paving a new street through which the Southern Pacific electric lines are to be operated by means of a loop line connecting the north and south lines at the east end of Alameda, Cal. The company will carry out the track-laying with its own men. J. Q. Barlow is assistant chief engineer.

**SOUTHERN PACIFIC OF MEXICO.**—The extension being built up the Yaqui river, in the state of Sonora, will be finished to Tonichi by January 1. A branch will then be built to the Barranca coal fields.

**SPOKANE & BRITISH COLUMBIA.**—According to press reports an agreement between the Provincial government and the Kettle Valley lines provides for the payment of a subsidy of \$5,000 a mile for 150 miles. Construction work is to be started next spring at four different points. The line will connect the boundary district with the Frazer valley, as well as tap the Okanagan and the Similkameen districts in British Columbia.

**TEXAS ROADS.**—According to reports the contract recently entered into between residents of San Antonio and J. F. Edwards for building from San Antonio south via Brownsville required that work was to have been started by November 11, the first 60 miles are to be finished and put in operation by December, 1910, and the line finished to the Rio Grande by December, 1911. (Oct. 15, p. 727.)

According to press reports from Zapata, Tex., a syndicate of St. Louis, Mo., capitalists, also said to be interested in the St. Louis, Brownsville & Mexico, are back of a project to build a line down the valley of the Rio Grande between Laredo, Tex., and Samfordyce, 135 miles, for which surveys are said to be made. C. M. Fish, of Laredo, is said to be securing the right-of-way.

**UMATILLA RAILWAY LIGHT & POWER Co.**—Preliminary surveys are said to have been made from the south end of Umatilla county, Ore., north to the Columbia river. The company was organized to build from Pendleton south to Dale, in Grant county, also a loop line northwest from Pendleton to the Columbia river, thence along that river to Umatilla and across the government reclamation project, returning to Pendleton, in all about 200 miles. Douglas Betz, president; G. A. Brown, vice-president. C. J. Smith, of Pendleton, is also interested. (July 30, p. 216.)

**UTICA SOUTHERN.**—Permission has been granted to this company by the New York Public Service Commission, Second District, to build an additional line from the southerly line of the village of Hamilton, in Madison county, N. Y., via Earlville and Sherburne through the village of Norwich, in Chenango county, 27 miles. The company has been previously granted permission to build from Clinton to Hamilton, with a branch between Deansboro and Waterville, 26 miles. The company is authorized to mortgage the extension and to issue bonds to the amount of \$628,000, par value, subject to the approval of the commission, the proceeds to be used for constructing and equipping the extension from Hamilton to Norwich, and is further authorized to issue \$400,000 five per cent. non-cumulative preferred stock, on condition that the proceeds be devoted to the construction and equipment of the extension. (Aug. 27, p. 383.)

**VERA CRUZ & ISTHMUS.**—Two branch lines, aggregating 62 miles, it is said, will be built in the state of Vera Cruz, Mex., during 1910. The Mexican government is said to own controlling interest in the company. Thomas Milan, president and general manager, Vera Cruz.

**WICHITA FALLS ROUTE.**—An officer is quoted as saying that the extension of the Wichita Falls & Northwestern, from Altus, Okla., northwest to Mangum, about 23 miles, was opened for operation on November 15. The contract has been let and material bought for the extension from Mangum north to Elk City, 42 miles. (Sept. 17, p. 521.)

**WINNIPEG, SALINA & GULF.**—Bonds have been sold by this company, and the proceeds, we are informed, now amount to \$6,000,000. Preliminary plans were made and a charter granted under the name of the Winnipeg, Yankton & Gulf, which was capitalized for \$100,000 to comply with the Kansas laws. A new charter will be taken out under the name of the Winnipeg, Salina & Gulf, with a capital of \$25,000,000. The projected route is from Omaha, Neb., south, via Belleville, Kan., Concordia, Salina, Sterling, Stafford, Pratt, Waynoka, Okla., Fairview and O'Keene to Oklahoma City, with a branch from Waynoka, west through Buffalo and Guymon, to Des Moines, N. M.; in all, about 900 miles. It is proposed to let contracts and begin work in about 60 days. The work will be light and include seven steel bridges, none of which will be over 400 ft. long. Maximum grades will be 6/10 of 1 per cent. and maximum curvature 2 degrees, 30 minutes. A construction company is being formed, who will build the line by subletting in sections of from 100 to 150 miles each. The company is backed by a trunk line now in operation into Omaha and will connect with the M., K. & T. at Oklahoma City and the St. Louis, Rocky Mountain & Pacific at Des Moines. H. Leone Miller, president, Salina, Kan.; F. H. Taylor and G. E. Graves, St. Louis, Mo., are to organize the Interstate Construction Co., to build the line. (Nov. 12, p. 944.)

**WINNIPEG, YANKTON & GULF.**—See Winnipeg, Salina & Gulf.

## Railroad Financial News.

**ATLANTIC COAST LINE.**—Stockholders on November 16 authorized a new mortgage, securing \$200,000,000 4 per cent. bonds, which are to be used for refunding purposes and for paying for new construction and double-track work. The stockholders also approved the issue of \$23,562,500 4 per cent. debenture bonds, to be used to retire the preferred stock and for other refunding purposes. The bonds are to be convertible after January 1, 1910, until 1916, into common stock at 135.

**BELT RAILWAY OF CHICAGO.**—See Chicago & Western Indiana.

**BOSTON & MAINE.**—J. P. Morgan, Charles S. Mellen and William Skinner have been elected directors, succeeding C. S. Lindsay, E. J. Rich and E. J. Ryder. An executive committee has been appointed, consisting of President Tuttle, Charles S. Mellen, F. C. Dumaine, Samuel Hemenway, J. P. Morgan, Richard Olney, William Skinner and Alexander Cochrane.

**BUFFALO, ROCHESTER & PITTSBURGH.**—Henry Yates has been elected a director, succeeding his father, Arthur G. Yates, deceased.

**CANADIAN NORTHERN.**—This company offered in London from October 27 to November 3 £850,000 (\$4,250,000) new 4 per cent. perpetual consolidated debenture stock, which will begin drawing interest January 1, 1910. The offering price was 93.

**CHICAGO & WESTERN INDIANA.**—Ira G. Rawn has been elected a director of this road and of the Belt Railway of Chicago, succeeding W. H. McDoel.

**CHICAGO, CINCINNATI & LOUISVILLE.**—The receiver has been authorized by the federal court to issue \$1,400,000 receiver's certificates, of which \$1,000,000 is to be used to retire \$1,000,000 outstanding 6 per cent. receiver's certificates, which are subject to call at par.

**CHICAGO, MEMPHIS & GULF.**—This is the new name of the Dyersburg Northern. The road runs from Dyersburg, Tenn., to Tiptonville, 31 miles.

**CHICAGO TERMINAL TRANSFER.**—The property of this company has been ordered sold under foreclosure on January 6. The upset price is \$15,140,000. On November 18 representatives of the minority stockholders made an amended petition asking that the decree of foreclosure be annulled and the 4 per cent. bonds be reinstated, and that the lease held by the Baltimore & Ohio be declared void. The petition also asks that the court fix a fair rental value since April 1, 1903, and that the Baltimore & Ohio be compelled to pay the excess of this fair rental over what was actually paid.

**CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.**—Oscar G. Murray, George W. Perkins, William Cotter and Norman B. Ream have been elected directors of this company, succeeding C. A. Hinsch, Lawrence Maxwell, George F. Brownell and F. B. Underwood.

**CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.**—Stockholders have authorized a new mortgage on the company's property for \$20,000,000. It was announced some weeks ago that the directors contemplated the sale in the near future of \$9,000,000 of bonds under this mortgage, the larger part of which will be used to refund the company's \$5,000,000 short term notes and other floating debt. The remainder of the bonds authorized will be available as needed for improvements and extensions.

**DETROIT, TOLEDO & IRONTON.**—A protective committee for the Detroit Southern first mortgage bonds of the Ohio Southern division of the D., T. & I., on which default was made in payment of interest due September 1, has been formed and the following are members of the committee: James N. Wallace, chairman; William A. Read, F. H. Ecker and F. E. Mowle, secretary, 25 Nassau street, New York. The committee, if occasion arises, may prepare and adopt a plan for the reorganization of the property.

**DYERSBURG NORTHERN.**—See Chicago, Memphis & Gulf.



**HUDSON COMPANIES (NEW YORK).**—This company has sold a new issue of \$3,000,000 5 per cent. notes of 1909-1912. The notes are secured by first mortgage  $4\frac{1}{2}$  per cent. convertible bonds of 1909-1957 of the Hudson & Manhattan [the operating company of the tunnels under the North river at New York] at the rate of \$1,500 bonds for each \$1,000 note outstanding. The notes are convertible at the option of the holder into Hudson & Manhattan bonds at 95 per cent.

**INTERNATIONAL & GREAT NORTHERN.**—Judge McCormick, of the United States Circuit Court, has authorized the receiver of the International & Great Northern to pay from the current earnings the interest due November 1 on the \$11,291,000 first mortgage bonds. This interest amounts to \$338,730.

**KANAWHA & MICHIGAN.**—Moffat & White, of New York, and Lee, Higginson & Co., of Boston, have bought the entire authorized issue of \$2,500,000 second mortgage 5 per cent. bonds of 1907-1927 of the Kanawha & Michigan.

**MEXICAN NORTHERN.**—A semi-annual dividend of 2 per cent. has been declared payable November 30 on the \$3,000,000 stock for the period January 1 to June 30. In 1903  $1\frac{1}{2}$  per cent. was paid and no dividends have been paid since.

**MISSOURI & KANSAS INTERURBAN.**—The receiver, who was appointed in June, 1908, has been discharged and the old company has been reorganized without change of capitalization (\$1,000,000 stock and \$600,000 first mortgage 5 per cent. bonds). The company has in operation 23 miles of interurban line extending from Kansas City to Olathe.

**MISSOURI PACIFIC.**—Stockholders at a special meeting on January 18, 1910, are to be asked to authorize an issue of \$175,000,000 refunding mortgage convertible 5 per cent. bonds. Of this issue, \$29,800,000 is now offered to stockholders at 95, and has been underwritten by Kuhn, Loeb & Co., New York. Out of the total issue of \$175,000,000, \$90,633,500 is to be reserved for refunding prior lien bonds, \$6,500,000 to refund equipment obligations, \$52,866,500 is to be used for betterments, improvements and additions and equipment, and \$25,000,000 is to be reserved to acquire mortgage bonds of the St. Louis, Iron Mountain & Southern, to be issued for betterments and additions on that property. The new bonds will be secured by mortgage on 3,779 miles of railway, on 165 miles of which they will at once be a first mortgage. When the new bonds now offered are issued, the total mortgage debt of the company, including all prior liens, will be at the rate of about \$25,500 per mile, exclusive of deposited St. Louis, Iron Mountain & Southern Railway Co. bonds.

**PENNSYLVANIA RAILROAD.**—Of the 10-year convertible  $3\frac{1}{2}$  per cent. bonds of 1902-1912 there were converted into stock at the end of business, November 15, \$39,763,000. Of the 10-year convertible  $3\frac{1}{2}$  per cent. bonds of 1905-1915 there were converted into stock \$13,160,000. The bonds of 1902 were convertible at 140 per cent. and the 1905 bonds were convertible at 150 per cent. The total stock which will have the right to participate in subscription for new stock to the extent of 25 per cent. is \$330,071,350. (Nov. 5, p. 896.)

**QUANAH, ACME & PACIFIC.**—The Texas Railroad Commission has authorized the issue of \$1,159,000 bonds. This is at the rate of \$26,000 per mile on the  $43\frac{1}{2}$  miles recently completed from Quanah to Paducah.

**SEABOARD AIR LINE.**—The semi-annual interest coupons due April 1, 1908, and the three coupons due subsequently, are being paid at the office of Blair & Co., 24 Broad street, New York. The following board of directors has been elected: J. W. Middendorf, J. B. Ramsey, Hennen Jennings, Franklin Q. Brown, J. S. Williams, L. F. Loree, James A. Blair, Y. Van den Berg, Wallace B. Dunham, H. Rieman Duval, N. S. Meldrum, H. Clay Pierce, Norman B. Ream, Townsend Scott, S. Davies Warfield, Henry C. Perkins, C. Sidney Shepard, Ernst Thalmann, George W. Watts and B. F. Yoakum.

**UTICA SOUTHERN.**—See this company under Railroad Construction.

**WINNIPEG, SALINA & GULF.**—See this company under Railroad Construction.

## Late News.

*The items in this column were received after the classified departments were closed.*

The Pennsylvania Equipment Co., Philadelphia, Pa., is in the market for 50 to 100 standard gage stock cars.

The Ontonagon Railroad is making surveys for a 10-mile extension from Ontonagon, Mich., to mile post 14.

The Bangor & Aroostook is making surveys for an extension from Grand Isle, Me., west to Fort Kent, 28 miles.

The Northern Pacific is said to have ordered 40 coaches from the American Car & Foundry Co. This item is not yet confirmed.

Surveys are now being made for an extension of the Raleigh & Southport, from Fayetteville, N. C., southwest to Hope Mills, seven miles.

The Duluth & Iron Range has given a contract to Carl Hall & Co., of Duluth, Minn., for building 1.71 miles of spurs to lines in Minnesota.

The Government Railway of Jamaica is in the market for locomotives. James Richmond, general manager, will be in New York next week.

The Clarksdale & Mississippi River has been incorporated in Mississippi to build from Clarksdale, Miss., north to Friar point, about 15 miles.

A new passenger station is to be put up at Harrisonburg, Va., for the joint use of the Baltimore & Ohio and the Southern, the work to be finished by July, 1910.

On the section of the Chicago, Milwaukee & Puget Sound through Thurston county, Wash., it is said the company will put in 12 overhead or undergrade crossings.

The White River Railroad has given a contract to the Bayonne Manufacturing Co., of Pittsfield, Vt., for an extension from Stockbridge north to Pittsfield, five miles.

The Scranton, Dunmore & Moosic Lake, a 10-mile line in Pennsylvania, from Scranton, is to be electrified during the coming winter and spring and open for business about May 1, 1910.

According to press reports contracts will be let at once by the United States Steel Corporation to build the Youngstown & Northern from Youngstown, Ohio, northwest to a point north of Girard.

Work is now under way by J. C. Williams, of Central City, Ky., on one and one-half miles of line on the Kentucky Midland, from Midland, Ky., south to Earles, and surveys are being made for 14 miles additional from Earles to Madisonville.

The attendance at the fall meeting of the American Railway Association in Chicago on Wednesday of this week was large, 200 members being represented by about 250 men. The association voted to send eight delegates to the International Railway Congress to be held at Berne, Switzerland, next July, this number to include the president and the general secretary.

The committee on transportation has organized with F. C. Rice (C., B. & Q.) chairman. The committee on maintenance has organized with J. W. Kendrick (A., T. & S. F.) chairman. The committee on safe transportation of explosives has organized with Dr. C. B. Dudley (Penn.) chairman. In the Bureau for the Safe Transportation of Explosives there are now 173 companies, operating 208,259 miles of road. The committee on Electrical Working has been organized with George Gibbs (Long Island) chairman. On recommendation of the committee on interchange of freight cars the association ordered to letter ballot the question of changing the per diem rate. Three rates are submitted, 30 cents, 35 cents and 40 cents. A letter ballot was also ordered on the question of adopting a rule to impose a penalty of five dollars for improper diversion of cars.

## Supply Trade Section.

Eli Emory Hendrick, president of the Hendrick Manufacturing Co., Carbondale, Pa., died on October 25.

Henry L. Leach, of Boston, recently appointed the railway representative of the Ehret Magnesite Manufacturing Co., Philadelphia, Pa., has resigned.

The Allis-Chalmers Co., Milwaukee, Wis., has let the contract for a new machine shop at the Washtenaw avenue plant to the Worden-Allen Construction Co., Milwaukee.

Pratt & Whitney, Hartford, Conn., have had plans prepared for a four-story, brick and steel addition to the plant. The new building will be 50 ft. wide and 100 ft. long.

The car building plant of the Pacific Car & Foundry Co. at Portland, Ore., mentioned in the *Railroad Age Gazette* of October 29, will, it is said, be completed by March 10.

The Carnegie Steel Co., Pittsburgh, Pa., is to build a finishing mill at Girard, Ohio. A site of 265 acres has been bought. The capacity of the new mill is placed at 30,000 tons monthly.

W. L. Cooper, manager of the European business of Robert W. Hunt & Co., Chicago, sailed on November 10 for London, after the completion of his annual business trip to the United States.

The McClintic-Marshall Construction Co., Pittsburgh, Pa., has bought a site at Indiana Harbor, Ind., and press reports say a structural steel plant is to be built which will have a capacity of 60,000 to 70,000 tons annually.

The American Steel Foundries, New York, has let the contract to the Penn Bridge Co. for an addition to its Alliance, Ohio, plant. The addition will be 55 ft. x 180 ft., of steel construction, with a tile roof of the saw tooth type.

The Government Railways of South Australia, Adelaide, ask bids until December 8 on steel boiler plates, copper plates, steel bars and other shapes, steam gages, copper tubing, engine, tender and car wheel tires and axles, and cast steel wheel centers.

The offices of the Pressed Steel Car Co., Pittsburgh, Pa., and the Western Steel Car & Foundry Co., Chicago, for the Southern district, will, on December 1, be removed from Atlanta, Ga., to the Munsey building, Washington, D. C., with L. O. Cameron, manager of sales, in charge.

A director of the Pullman Co., Chicago, is quoted as saying that the passenger car department has enough orders on hand to keep the plant busy for another year. Orders are now accepted subject to delivery not earlier than October, 1910. The freight car department is not up to the passenger department.

Edward C. Wallace, one of the voting trustees, has been elected president of Milliken Brothers, Inc., New York, and the receivers are to turn the property over to the creditors' committee soon. Only the fabricating plant will be continued in operation for the present, but it is intended to start up the steel mill as soon as working capital is available.

United States Consul E. N. Gunsaulus, Johannesburg, Transvaal, reports that a commercial information bureau has been established in the consulate. Full sets of catalogues, price lists, etc., of American manufacturers and dealers are wanted. The market is good, the imports into this consular district amounting to nearly \$91,000,000 last year. The products desired include machine tools, railway supplies and a wide variety of miscellaneous articles.

The Metropolitan Inspecting Bureau, Fort Dearborn building, Chicago, a new firm of inspecting engineers, announces that it is equipped to handle all chemical and physical testing and the inspection of locomotives, cars, structural steel, rails, lumber, castings, car wheels, axles and building material. The men in the company are D. W. Schreck, J. W. Jamison and W. H. Doty. Mr. Schreck was for several years connected with Robert W. Hunt & Co., Chicago.

The first half of the current fiscal year of the Westinghouse Machine Co., Pittsburgh, Pa., which ended last month, showed a business volume representing the second largest in the history of the company for a similar period. It is confidently expected that the next six months will, however, show a much better result. The company has taken on several new lines of product within the last year, and 40 per cent. of the business done by the company in recent months is represented by these new lines.

The Illinois Car & Manufacturing Co., the incorporation of which was announced in the *Railroad Age Gazette* of November 20, 1909, has its plant at Hammond, Ind., well under way. McKeown Bros., Chicago, have the contract for the buildings. Good progress has been made on the buildings and some of the machinery is already bought, anticipating the opening of the plant. The site includes 24 acres along the tracks of the Indiana Harbor Belt. The two main buildings are the blacksmith shop, 25x52 ft., and the mill building, 50x150 ft. The president of the company, P. H. Joyce, has his office at present at 1700 Fisher building, Chicago.

The Bureau of Manufactures, Washington, D. C., has received from a consul in Russia a list (inquiries No. 4089 and No. 4119) of opportunities for the sale of American products. A trade agency has been organized to get direct business connections between American and Russian firms. The list includes: No. 8, railway and factory supplies; No. 12, boilers and boiler-room apparatus; No. 14, boilers, motors and machinery; No. 15, machine tools and railway supplies; No. 16, telegraph and telephone supplies; No. 26, boilers and railway supplies; No. 31, belting, engines, pumps, engineering instruments and turbines; No. 35, locomotives and railway supplies.

The awards made at the Alaska-Yukon-Pacific Exposition this summer included the following: Grand prizes—American Locomotive Co., New York, logging locomotives, steam shovels, snow plows, electric trucks; Seattle Car Manufacturing Co., Seattle, Wash., logging cars and trucks; Western Wheeled Scraper Co., Chicago, dump cars, scrapers and road plows. Gold medals—A. C. Clark, Burton, Wash., cattle guard; Myers Track Tool Co., Buffalo, N. Y., track wrench; Allen C. Rush, Los Angeles, Cal., oil burner for locomotives; Seattle Car Manufacturing Co., Seattle, Wash., car truck; Seattle Frog & Switch Co., Seattle, Wash., frog switches and track material. Silver medals—Allen C. Rush, Los Angeles, Cal., tie; Russel Wheel & Foundry Co., Detroit, Mich., logging truck. Honorable mention—H. H. Paulson, Marshfield, Wis., car coupler. In the electric section, 26 grand prizes were awarded to the General Electric Co., Schenectady, N. Y., for electric fittings and apparatus, motors, generators, mine locomotives, etc., and gold medals were awarded to the Collins Wireless Telephone Co., Newark, N. J., for a wireless telephone, and to the Radio Telephone Co., New York, for wireless telephone and telegraph combined.

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### TRADE PUBLICATIONS.

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*Chicago, Milwaukee & St. Paul.*—The passenger department has issued a descriptive booklet on the health resort at Excelsior Springs, Mo., and its train service to that point. The publication is bound in a neat pearl gray and is well illustrated.

*Hose and Packing.*—The Woven Steel Hose & Rubber Co., Trenton, N. J., has published an illustrated catalogue of its armored hose, woven hose, rubber tubing, rubber belting, matting and a large variety of packings. The catalogue is fully illustrated and prices are given.

*Illinois Central.*—New Orleans for the Tourists is the title of an attractively prepared booklet recently issued by the passenger department. The text outlines the early history of the city, describes the French quarter and talks of other matters



of interest. The photographic illustrations are well selected and printed.

**Denver & Rio Grande.**—The souvenir descriptive time-table of the itinerary of the special train carrying President Taft and his party over the lines of the Denver & Rio Grande was printed for the information of the members of the party. In columns paralleling the time schedule were given the important towns and points of interest along the way, with their elevations, distances from Denver, natural resources and industrial enterprises. The task of handling the presidential train over the Denver & Rio Grande was somewhat complicated by the combination of standard and narrow gage service and the detour to the portal of the Gunnison tunnel, but in spite of these complications the train was run exactly on time and without a mishap.

### RAILROAD STRUCTURES.

**BAY CITY, MICH.**—An officer of the Michigan Central writes that the current rumors that the company is to build new car and machine shops are premature. The building of repair shops is considered but no definite action has been taken. (Nov. 12, p. 946.)

**BREWSTER, ALA.**—The Louisville & Nashville, it is reported, will enlarge its station.

**DAYTON, OHIO.**—Land is said to have been bought as a site for a new freight house at Second and Webster streets for the Cincinnati, Hamilton & Dayton.

**DAYTON, WASH.**—The Spokane, Walla Walla & Western expects to build a hydro-electric plant on the Tucannon river. The plant is designed to develop 5,000 h.p.

**FLORENCE, KAN.**—The Atchison, Topeka & Santa Fe expects to build a small bridge over the Cottonwood river, although plans are not yet completed.

**GRAND CROSSING, ILL.**—Plans are being made for the separation of grade crossings.

**INDIANAPOLIS, IND.**—Fire destroyed the carpenter shop and damaged the mill room of the Cleveland, Cincinnati, Chicago & St. Louis shops on November 7. The origin of the fire is unknown. Press reports give the loss as \$5,000.

**JACKSONVILLE, FLA.**—The Clyde Steamship Co. has bought 800 ft. of river front property east of Market street and will build piers and terminals. Three piers are to extend out in the river to the harbor line. The terminal buildings will be 40 ft. wide and extend the full length of the property. Work is to be begun as soon as possible. It is also planned to build a warehouse at Bay and Market streets at some later date.

**MEXICO CITY, MEX.**—The Pan-American is said to have plans made for putting up a bridge across the Suchiate river, which forms the boundary between Mexico and Guatemala.

**MIMICO, ONT.**—According to press reports the Grand Trunk will spend \$100,000 for new shops, an engine house and other improvements in Mimico.

**MONTGOMERY, ALA.**—An officer writes that the new freight house to be built in Montgomery will be a brick structure, one story high, with a two-story office at one end, 42 ft. by 306 ft. The company is doing the work with its own men. (Nov. 12, p. 947.)

**NEW YORK.**—Samuel Rea, second vice-president of the Pennsylvania Railroad, says that there is no truth in the published reports that the Pennsylvania Railroad is contemplating the erection of a hotel on property facing its Seventh avenue station in New York. This Seventh avenue property is part of the surplus real estate along its tunnel extension which the company proposes to sell.

**OKLAHOMA CITY, OKLA.**—An officer of the Atchison, Topeka & Santa Fe writes that the company has under consideration the question of enlarging its yard at Oklahoma City, but the plans are not yet definitely decided upon.

**PRINCE RUPERT, B. C.**—According to press reports from Vic-

toria, B. C., announcement has been made by the Grand Trunk Pacific that the Dominion government will construct a floating dry dock, to cost \$4,500,000, at Prince Rupert.

**RENO, NEV.**—Work is said to be under way on a new general office and passenger station for the Nevada-California-Oregon railway. The building is to be of brick construction with stone trimming, 50 ft. by 100 ft., fronting on Fourth street, and is to cost \$35,000. (Oct. 22, p. 781.)

**RICHMOND, IND.**—An officer of the Pennsylvania denies the reports that a large repair shop is to be built at Richmond.

**ST. PAUL, MINN.**—The Twin City Rapid Transit Co. is to build a one-story brick and concrete repair shop, 90 ft. wide and 122 ft. long. The estimated cost is given as \$19,764.

**SEATTLE, WASH.**—An officer of the Oregon & Washington writes that a contract has been given to the Thompson-Starratt Co., of New York, and work is now under way on the passenger station. The plans call for a five-story reinforced concrete frame structure, with brick walls, and terra cotta and stone trimmings, 145 ft. by 235 ft., at Fourth and Jackson streets. (Sept. 10, p. 481.)

**SOMERVILLE, MASS.**—The Boston & Maine has let a contract to the Aberthaw Construction Co., Boston, Mass., for a repair shop.

**VANCOUVER, B. C.**—Plans, it is said, are being made by the Canadian Pacific for building an addition to the station at Vancouver.

**WACO, TEX.**—According to press reports work has been started by the St. Louis Southwestern on a new freight house at the corner of Eighth and Mary streets. The structure will be 540 ft. long, of brick and steel construction, with concrete floors. (Oct. 8, p. 666.)

**WALLACE, IDAHO.**—An officer of the Oregon Railroad & Navigation Co. writes confirming the report that a contract has been given to the Wallace Concrete Co. and work is now under way on a new passenger station, to cost about \$20,000. The building will have two stories and will be 30 ft. by 268 ft. (Nov. 5, p. 898.)

**WALLA WALLA, WASH.**—The Northwestern Gas & Electric Co. has finished a two-story brick building at Main and Sixth streets, the lower floor to be used as an interurban terminal station and the second floor for the company's offices. The building is 50 ft. wide and 150 ft. long.

### FOREIGN RAILWAY NOTES.

The minister of public works of Brazil has authorized the extension of the Pernambuco Railway to Triunpho and the Central of Parahyba do Norte Railway from Guarabira to Pecerhy. Both lines form part of the Great Western of Brazil.

The Swedish authorities have been discussing the introduction of sleeping-cars for third-class passengers. Such accommodations their investigators found only in Russia, where these passengers carry their bedding with them. This, they thought, would hardly do for Sweden.

The Hungarian State Railways, which already had four establishments for impregnating ties, have just finished a fifth, with a capacity for 400,000 ties yearly, at a cost of \$160,000. The five works can turn out 1,800,000 ties per year. Oak ties become scarce and costly and more and more beech is used, which is not worth much unless treated.

The Honduras Railroad, building a line from Truxillo, on the Atlantic coast, to Tegucigalpa, the capital of Honduras, has 18 miles graded and some track laid. The railway company has established experimental plantations and proposes to educate the people in the art of developing the country. Cotton is raised down there on plants that grow to be small trees. These, however, are trimmed down to a maximum height of 5 ft. The railway company also proposes to stimulate immigration into the country.

## Equipment and Supplies.

### LOCOMOTIVE BUILDING.

*The Hocking Valley* is figuring on locomotives.

*The Pennsylvania* has ordered a number of locomotives from the Juniata shops.

*The Vandavia* has ordered nine consolidation locomotives from the American Locomotive Co.

*The Siamese Legation*, Washington, D. C., has specifications for five tank locomotives, meter-gage, on which bids are wanted.

*The Atchison, Topeka & Santa Fe* is negotiating with the Baldwin Locomotive Works for 30 Mallet locomotives, but the order is not yet given.

*The Carolina, Clinchfield & Ohio* has ordered four Mallet freight locomotives and three Pacific passenger locomotives from the Baldwin Locomotive Works.

*The Winnipeg, Salina & Gulf*, Salina, Kan., which is to let contracts within two months for building a road from Omaha, Neb., south to Oklahoma City, Okla., intends to buy 100 locomotives.

*The Pennsylvania Lines West* have ordered 27 six-wheel switch engines and five consolidation locomotives from the American Locomotive Co. and 25 additional simple consolidation (H8) locomotives from the Baldwin Locomotive Works. Specifications for the latter were published in the *Railroad Age Gazette* of November 5.

*The Seaboard Air Line* has ordered 15 ten-wheel passenger locomotives and five six-wheel switchers from the Baldwin Locomotive Works, as mentioned in the *Railroad Age Gazette* of October 22. The general dimensions for the two types are as follows:

Type of engine.	10-Wheel.	Switch.
Weight on drivers .....	139,000 lbs.	144,000 lbs.
Total weight .....	172,000 lbs.	144,000 lbs.
Cylinders .....	31 in. x 28 in.	19 in. x 28 in.
Diameter of drivers .....	72 in.	51 in.
Type of boiler .....	Ext. wagn top.	Ext. wagn top.
Working steam pressure ..	200 lbs.	190 lbs.
Heating surface, tubes ..	2,448 sq. ft.	2,000.5 sq. ft.
" " firebox ..	177 "	117.5 "
" " total ..	2,625 "	2,118.0 "
Tubes, number .....	328	254
" outside diameter ..	2 in.	2 in.
" length .....	14 ft. 1 1/2 in.	15 ft. 1 1/2 in.
Firebox, type .....	Narrow.	Wide.
" length .....	125 1/2 in.	66 1/2 in.
" width .....	41 1/4 in.	66 in.
" maker .....	Worth Bros.	Worth Bros.
Grate area .....	35,944 sq. ft.	30.3 sq. ft.
Tank capacity for water ..	6,500 gals.	4,000 gals.
Coal capacity .....	10 tons.	7 tons.

The following special equipment applies to all the locomotives except where noted:

Axles .....	B. L. W. special treated steel
Bell ringer .....	Golmar
Boiler lagging .....	Johns-Manville
Brakes .....	Westinghouse
Brake-beams .....	Simplex on switch, Hercules on passenger
Brake-shoes .....	Am. Brake-Shoe & Fdy. Co.
Couplers .....	Simplex
Driving boxes .....	Cast steel
Headlight .....	Schroeder on switch; Pyle-Nat. elec. on passenger
Injector .....	Nathan
Journal bearings .....	Ajax
Piston and valve rod packing ..	U. S. Metallic and Garlock
Safety valve .....	Consolidated on switch; Ashton on pass.
Sanding devices .....	Watters
Sight-feed lubricators .....	Nathan Bull's-eye
Springs .....	Railway Steel-Spring
Staying .....	Tate flexible
Steam gages .....	American
Tires .....	Standard
Tubes .....	Worth Bros., charcoal iron
Valve gear .....	Link-motion on switch; Baker-Pilliod on passenger
Wheel centers .....	Cast steel

### CAR BUILDING.

*The Third Avenue Railroad* is figuring on cars.

*The Hocking Valley* is figuring on car equipment.

*The Metropolitan Street Railway*, New York, is figuring on cars.

*The Louisville & Nashville* is building about 14 passenger cars at its own shops.

*The Northern Pacific* has ordered 500 Lidgerwood cars from the Pressed Steel Car Co.

*The Toledo, St. Louis & Western* is in the market for 750 steel underframe 40-ton box cars.

*The Chicago, Burlington & Quincy* recently ordered eight dining cars from the Barney & Smith Car Co.

*The Erie* is in the market for the 100 furniture cars mentioned in the *Railroad Age Gazette* of August 27.

*The Siamese Legation*, Washington, D. C., has specifications for 130 cars, meter-gage, on which bids are wanted.

*The Baltimore & Ohio* is said to be in the market for additional freight equipment. This is not yet confirmed.

*The Lake Superior & Ishpeming* has ordered the 50 flat cars mentioned in the *Railroad Age Gazette* of September 10.

*The Chicago Great Western* is in the market for 300 to 400 steel flat cars, 200 steel gondolas, 200 all-wood refrigerators and 200 wood vegetable cars.

*The Illinois Central* has leased 500 refrigerator cars from the Mather Horse & Stock Car Co. The cars are to be built by the Haskell & Barker Car Co.

*The Atlantic Coast Line* has received all bids on the 750 box cars for which it has been in the market, as mentioned in the *Railroad Age Gazette* of November 5.

*The Berwind-White Coal Co.* ordered the 300 cars mentioned in the *Railroad Age Gazette* of November 5 from the Cambria Steel Co. and not from the Pressed Steel Car Co.

*The Rock Island Southern* has ordered eight interurban passenger cars with smoking compartments and two express cars from the Niles Car & Manufacturing Co., Niles, Ohio.

*The Aurora, Elgin & Chicago* has ordered five city car bodies and one baggage car body from the Niles Car & Manufacturing Co. The trucks will be made by the J. G. Brill Co.

*The Fresno Traction Co.*, Fresno, Cal., has ordered 10 double-truck, pay-as-you-enter cars from the American Car Co. This equipment was mentioned in the *Railroad Age Gazette* of September 3.

*The Norfolk & Southern* has ordered from the Fitz-Hugh, Luther Co. 200 thirty-ton flat cars and 500 thirty-ton box cars. This equipment was mentioned in the *Railroad Age Gazette* of November 5.

*The San Antonio & Aransas Pass* recently ordered 50 forty-ton, 40-ft. wooden flat cars from the Haskell & Barker Car Co., and 15 forty-ton all-steel tank cars from the American Car & Foundry Co.

*The Charlotte Harbor & Northern* has ordered nine passenger cars from the Barney & Smith Car Co. and is said to have ordered 50 freight cars from the American Car & Foundry Co. The latter item is not yet confirmed.

*The Duluth, Missabe & Northern* is in the market for 1,000 fifty-ton all-steel hoppers. A patented car of the type of the Summers car will probably be ordered. It is understood the matter is to be closed within a month.

*The Spokane & Inland Empire* advises that it is not in the market for parlor cars, as has been currently reported. No rolling stock is being considered in addition to the eight cars described in the *Railroad Age Gazette* of October 8.

*The Winnipeg, Salina & Gulf*, Salina, Kan., which is to let contracts within two months for building a road from Omaha,



Neb., south to Oklahoma City, Okla., intends to buy 100 passenger cars, 2,000 box cars, 2,000 coal, stock and flat cars, and 100 cabooses.

The *Detroit, Toledo & Ironton* was reported in the *Railroad Age Gazette* of November 5 as being in the market for 2,500 freight cars. It is now understood that these cars were built some time ago by the American Car & Foundry Co., but that delivery was postponed.

The *Pennsylvania* has ordered 10,000 freight cars as follows: Lines East, 3,500 steel hopper gondola coal, 50-ton (G L a.) cars, and 500 steel underframe, 50-ton flat (F M) cars from the Pressed Steel Car Co.; and 1,000 G L a. cars from the Standard Steel Car Co.; Lines West, 2,500 steel, quadruple hopper, coke, 50-ton (H 21) cars, 1,500 G L a. cars and 500 fifty-ton box X L cars from the Pressed Steel Car Co., and 500 X L cars from the Ralston Steel Car Co.

The *Temiskaming & Northern Ontario* has ordered 50 forty-ton steel underframe box cars. They will weigh about 40,500 lbs. and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, inside, and 37 ft. 9½ in. long, 9 ft. 10⅞ in. wide and 14 ft. 6 in. high, over all. Bodies will be of wood and underframes of steel. The special equipment includes:

Axles .....	Nova Scotia Steel Co.
Bolsters, truck .....	Simplex
Brakes .....	Westinghouse
Brake-beams .....	Simplex
Brake-shoes .....	Steel back, Can. Iron Corp. Co.
Brasses .....	Canadian Bronze Co.
Couplers .....	Tower, 5 in. x 7 in.
Doors .....	Security side doors; Chicago grain doors
Door fastenings .....	National Malleable Castings Co.
Draft gear .....	Miner
Dust guards .....	Harrison
Journal boxes .....	McCord
Roofs .....	Chicago Winslow, corrugated iron
Side bearings .....	Susemihl
Trucks .....	Arch bar
Wheels .....	Cast iron

The *Baltimore & Ohio*, as mentioned in the *Railroad Age Gazette* of October 29, has ordered 1,000 box cars from the American Car & Foundry Co., 2,400 steel hopper cars from the Standard Steel Car Co. and 1,000 steel hopper cars from the Cambria Steel Co. The box cars will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. 1¼ in. high, inside, and 39 ft. 2¾ in. long, 10 ft. 1½ in. wide and 13 ft. 7½ in. high. Bodies will be of wood and underframes of steel. The steel hoppers will measure 31 ft. 6 in. long, 9 ft. 4 in. wide and 7 ft. 7½ in. high, inside, and 33 ft. 8¾ in. long, 9 ft. 11½ in. wide and 11 ft. 3¾ in. high, over all. The special equipment includes:

Axles .....	Open-hearth steel, Balt. & Ohio specifications
Bolsters, body .....	Built-up
Brakes .....	Westinghouse
Brake-beams .....	Creco
Brake-shoes .....	Cast-iron with wrought iron inserts
Brasses .....	Balt. & Ohio specifications
Couplers .....	M. C. B., 5 in. x 7 in.
Doors .....	Side (box); drop (hopper)
Door fastenings .....	Dunham (hopper)
Draft gear .....	Westinghouse
Dust guards .....	Bass wood
Journal boxes .....	5 in. x 9 in. (box)
Paint .....	5½ in. x 10 in. (hopper)
Roofs .....	Balt. & Ohio specifications
Springs .....	Murphy (box)
Wheels .....	Balt. & Ohio specifications
	Cast iron, 33-in., 675-lb. (box);
	Cast iron, 33-in., 750-lb. (hopper)

## MACHINERY AND TOOLS.

The *Denver & Rio Grande* has bought new machinery for the Alamosa, Colo., shops at a cost of about \$30,000.

The *Blue Island Car & Equipment Co.*, Blue Island, Ill., has ordered a 20-in. bar mill with housings, a shear and a squeezer from the *Lewis Foundry & Machine Co.*, Pittsburgh, Pa.

The *Whiting Foundry Equipment Co.*, Harvey, Ill., has an order for nine 10-ton electric traveling cranes, each bridge carrying two five-ton trolleys, from the *Illinois Steel Co.*, Chicago.

*Joseph T. Ryerson & Son*, Chicago, has listed a desirable lot of used machinery in the November stock list. Lathes, milling machines, planers, shapers, punches, shears, presses, drills and motors are included.

## IRON AND STEEL.

The *Lake Shore & Michigan Southern* has ordered 1,000 tons of bridge steel.

The *Mexican Central* is expected to close soon for about 20,000 tons of bridge steel.

The *Duluth & Northern Minnesota* will probably order 500 tons of Bessemer 56-lb. rails for early spring delivery.

The *New York, Chicago & St. Louis* has ordered 3,000 tons of rails from the Steel Corporation. Delivery is for 1910.

The *American Iron & Steel Manufacturing Co.*, it is said, is to build a steel billet mill at Lebanon, Pa. The billets will be made by electric process.

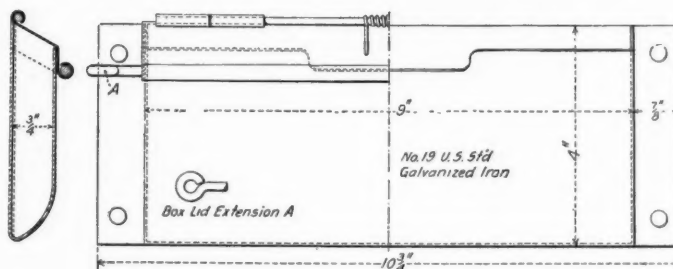
The *Illinois Central* has ordered 20,000 tons of rails from the *Tennessee Coal, Iron & Railroad Co.* The same company is also in the market for 1,300 tons of bridge steel.

The *Chicago & North Western* is about to close for 2,000 tons of structural steel for track elevation work. This is in addition to the heavy orders already placed for that work.

**General Conditions in Steel.**—It is said that an advance in prices on steel for railway equipment will be made on December 1. Sales of 54,000 tons of Bessemer pig iron were made in Pittsburgh last week, over half of it for delivery during the current year. The price remained at \$19. Orders for steel are not coming in large lots, but small orders are being placed in satisfactory volume. It is expected that steel orders placed during November will exceed those of October.

## M. C. B. Defect and Repair Card Box.

The M. C. B. Association has frequently had under discussion during the last few years the question of repair and defect cards and their abuses. The repair card is a voucher for work actually performed on a damaged car, and as such should accompany the car on its return journey to the parent road, for it is the material witness vouching for repairs actually made. The card is a protection against wrong repairs and if it does not reach home with the car it means an immense amount of tracing, often resulting in finding that "Parties responsible for improper repairs cannot be located."



M. C. B. Repair Card Box.

Even when tacks and hammer are handy and the card, fully made out, is nailed to intermediate or side sill, it is frequently indecipherable when it arrives home.

The M. C. B. box, made by the U. S. Metal & Manufacturing Co., New York, has been devised to meet all of these conditions, so that a card can travel thousands of miles and come out just as fresh as when it was first placed in the box at the repair shops. Made of galvanized iron, it is strong enough to be safe from flying gravel, etc., and, being provided with a spring lid, the card is thoroughly protected from moisture. The box can be nailed or bolted to wooden sills, and can be riveted to steel sills.

An extension to the lid enables a gloved hand to raise the same and an offset in the front of the box will allow the card to be seen and easily removed for inspection, etc., when the lid is raised. The box is made of one piece and the lid pressed from another piece of No. 19 U. S. galvanized iron, and by this simple construction the device is made both durable and cheap.

**Fairbanks, Morse & Co. Motor Car.**

The Pennsylvania Railroad has arranged to carry passengers between Smyrna, Del., and Clayton, on the Smyrna branch of the Philadelphia, Baltimore & Washington, with a gasolene motor car. The car arrived at Wilmington, Del., on October 10, having made the run from Three Rivers, Mich., under its own power, in charge of J. Milliken, superintendent of motive power of the P., B. & W. The trip was a good try-out for the car and was made without trouble of any kind. The total distance is 780 miles; the actual running time, 28 hours, and the average miles per hour, 27½.

The car was built by Fairbanks, Morse & Co., Chicago, and is the fifth of this type to be placed in regular passenger service. The engine is four-cylinder, four-cycle, water-cooled; it is rated at 50-60 h.p., but has developed 75 h.p. under test. It is a very heavy engine, all parts being liberally propor-

**Motor Car; Fairbanks, Morse & Co.**

tioned and designed especially for this car. A double system of ignition is used, one set of spark plugs being directly connected with the magneto and one with storage batteries. The transmission is gear type. The shafts run in roller bearings and the gears are in mesh at all times. Three speeds are obtained in each direction, all being controlled by a single hand wheel. The clutch is automatically released in changing gears.

The body of the car is divided into two compartments, the forward one, 11 ft. long, contains the engine and has room for light baggage and express. The rear compartment is 18 ft. long and has seating capacity for about 30 people. As the car will be used on a short run, it is arranged with control at each end, thus avoiding the necessity for turning. Underneath the body of the car is a gasolene tank of 50 gals. capacity, from which gasolene is forced by air pressure to a

small working tank in the engine compartment, feeding thence to the engine by gravity. The exhaust from the engine is used to heat the car, the exhaust pipe having a cut-out so that it can be turned over water coils or straight through the roof. The car is equipped with air-brakes and a chime whistle.

As the use of gasolene cars in passenger service is being watched closely, the figures below will be interesting; they show actual performance during the month of September, 1909, of the same type of car operating on the Stanley, Merrill & Phillips Railway:

Miles run .....	3,234
Passengers carried .....	1,106
Wages of crew .....	\$127.51
Gasolene (515 gals.) .....	46.35
Lubricating oil .....	8.97
Total .....	\$182.83
Cost per mile .....	\$0.06

**Bicentric Padlock.**

The Yale & Towne Manufacturing Co., New York, has just put on the market several new padlocks. The one illustrated

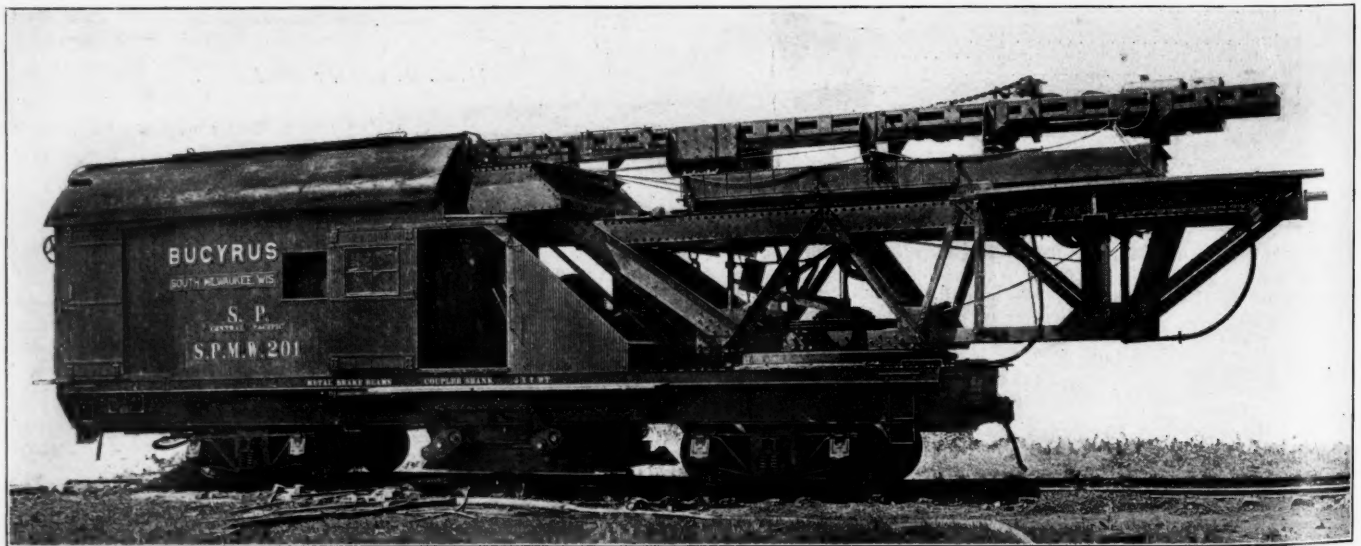
herewith embodies the company's new bicentric system of master-keying. Master-keying is accomplished in different ways with different types of locks, and even in different ways with pin tumbler locks. The two-plug master-key pin tumbler lock is claimed to give the greatest security.

Either of the two cylinders will throw the lock. The master-key operates one of the cylinders, which is the same in all the locks in a given group. The change-keys are all different, each one operating the change cylinder of one padlock only. The system may be extended to have one grand-master-key opening all locks, a number of sub-master-keys each operating all the locks in a certain group, and finally the change-keys operating single locks. The lock can also be arranged so as to open only when both cylinders are operated at once.

The company keeps careful records, extending for years back, of all locks furnished.

**Bicentric Lock.****Locomotive Pile Driver.**

The Bucyrus Co., South Milwaukee, Wis., builds a pile driver, illustrated herewith, that differs from the ordinary type of driver in that it is designed to run at speed under its own power. It is capable of propelling 250 to 300 tons, inclusive of its own weight, up light grades at a speed of 15 miles an hour, or 200 tons up a 1¼ per cent. grade at 10

**Bucyrus Pile Driver.**



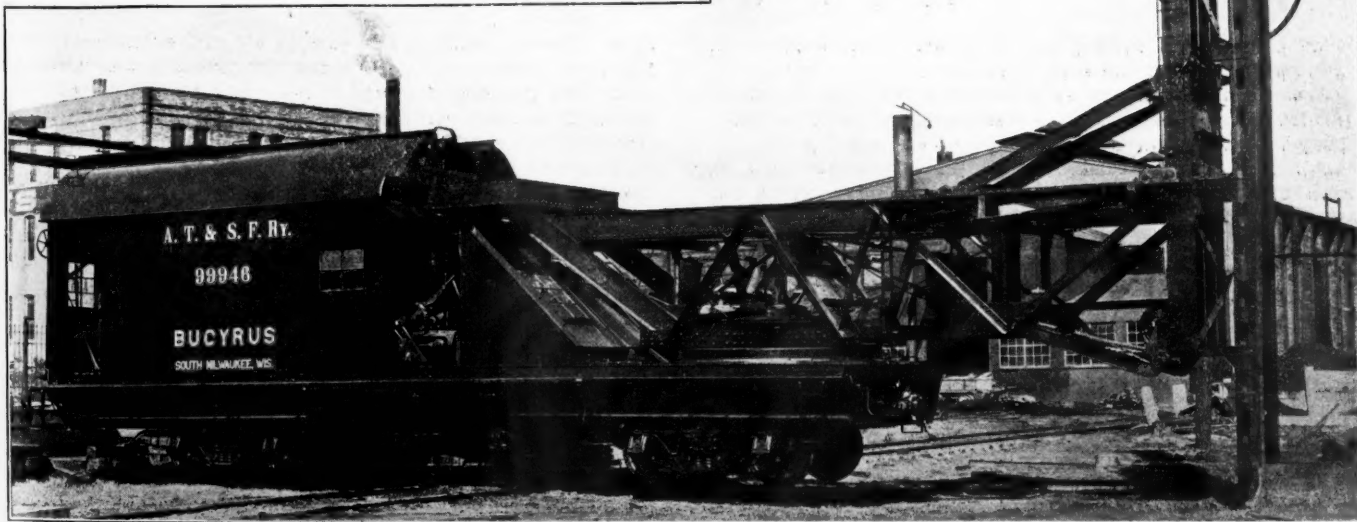
miles an hour. Running on level track or easy grades, with moderate loads, a speed of 25 miles an hour can be maintained, and in a recent test the machine pulled a passenger coach for 12½ miles at an average speed of 28 miles an hour. The machine is designed to drive piles either by steam or drop hammer, and its performance is said to be perfectly satisfactory. It is at present in use on the Atchison, Topeka & Santa Fe, the Southern Pacific and the Canadian Pacific.

The steel car body on which the machinery rests is 40 ft. long, the boiler being mounted at the rear of the car, the engine and winding drums just ahead, and the leaders and leader-raising mechanism on a swiveling frame over the forward truck. The boiler is of the locomotive type, 54 in. in diameter, 15 ft. 9 in. long, designed for 175 lbs. pressure. The main engines are 11 in. x 12 in. double cylinder, with Stephenson link motion and balanced D valves. The pile hoist and hammer hoist drums are mounted above the main engine beds and are driven by a spur pinion on the crank shaft, through wood-lined cone friction clutches.

The propelling gearing consists of two 4-in. bevel gear shafts running directly from the crank shaft to the trucks. Two sets of bevel gearing are provided at the crank shaft, the one for slow speed, driving both trucks, and the one for high speed, driving the rear truck only. The connections between the propelling shaft and the truck axles are made by a train of bevel gears supported on brackets rigidly attached to the car body. The last bevel gear in each train is cast with a large hollow hub, having a 2-in. clearance from the axle. The driving connections to the axles are made by universal joints bushed with bronze throughout. The flexibility of this driving gear permits the trucks to turn on curves and pass over frogs without interference and without communicating shocks to the gears. If it is desired to haul the pile driver in a train, the gearing can be quickly disengaged at the axles.

By swinging the swiveling frame upon which the leaders and leader mechanism are mounted, piles can be driven at any point within 19 ft. of the track center. The driving gear of

by which the entire machine may be lifted clear of the rails and turned end for end, thereby enabling it to drive piles 32 ft. from the center of the track on which it stands. The turntable consists of a pair of cast-steel ball races, about 5 ft. in diameter, supplied with large steel balls to form an anti-friction bearing upon which the machine is turned. The lower ball race casting is equipped with jackscrews at the four corners, and base castings to carry the weight upon the rails. The upper ball race is suspended from the car body



Pile Driver Swung at Right Angles to Track.

the swiveling frame consists of a large steel worm wheel and bronze worm, and furnishes a powerful mechanism for crowding piles. The swiveling frame is pivoted near its center around a pintle on the main car body, and carries at the rear end a counterweight to permit the swiveling frame to be turned across the track without throwing the machine out of balance. The leaders are all-steel, 40 ft. long, built up of 8-in. channels and plates, with the necessary connecting yokes. They are raised and lowered by power taken from the main engine through the same worm gear which swings the swiveling frame, and can be run either up or down in 1½ minutes. The leaders are pivoted to the leader-raising frame and can be swung to either side for driving batter piles, or sloped backward by the hoisting mechanism for the same purpose.

There is a turntable hung from the center of the car body,

by a system of powerful parallel levers operated by hydraulic lifting cylinders, receiving pressure from the boiler feed pump. These lifting cylinders push the turntable down upon the track and then lift the entire machine, including trucks, clear of the rails. A swinging gear is provided by which four men can then turn the machine end for end, when it is lowered to the rails by releasing the water from the lifting cylinders. When not in use, the turntable is lifted 7 in. clear of the rails and held in place by safety retaining pins. The entire turning operation is accomplished in about 10 minutes. While the machine is mounted on the turntable its stability is such that, standing crosswise of the track, the leaders may be run up and down and a pile picked up, located and driven with perfect safety.

The trucks and springs are of standard M. C. B. construc-

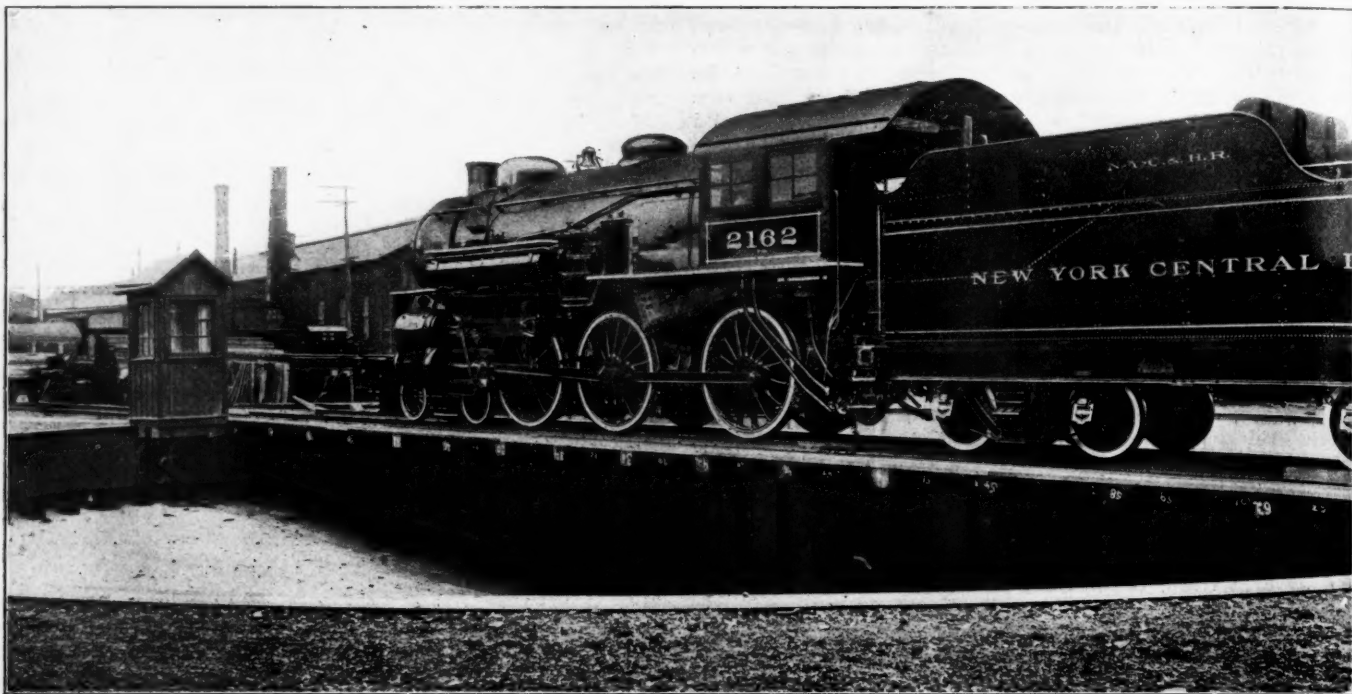
tion, but six springs are placed under each end of each bolster, instead of four as in ordinary practice. The machine is provided with both air and hand brakes.

#### Air and Electric Turntable Tractors.

The 90-ft. locomotive turntable shown herewith is a new installation made by the New York Central & Hudson River at West Albany, N. Y. The electric tractor which is used is pat-

ent of new installations. A spring is placed on top of the machine and in contact with the brackets to absorb any shock due to the locomotive striking the table. The controller is of the drum type and is placed in the operator's shelter over the tractor.

The second cut illustrates the details of this machine and the third shows a compressed air tractor of the latest design, containing many features not found in the earlier models. The valve is air adjusted, so that it is balanced at all pres-



Electric Tractor on New York Central Turntable.

ented by James L. Pilling, and is simple in construction, low in maintenance cost and high in efficiency.

A motor of a type best suited to the power circuit available furnishes the power, which is transmitted to the 33-in. double flanged traction wheel by a train of cut steel gears. The motor is mounted on heavy steel plates attached to a cast steel universal bracket. The universal bracket pivots about

two pins, which permits the traction wheel (which is a double flanged, 33-in. diameter wheel) to swing both vertically and horizontally so as to accommodate itself to any lateral or vertical variations in the pit rail; and therefore, on account of this flexibility in the tractor, it is unnecessary to spend any money on the pit rail, in case of old installations, or to continually keep the pit rail perfectly true in the case

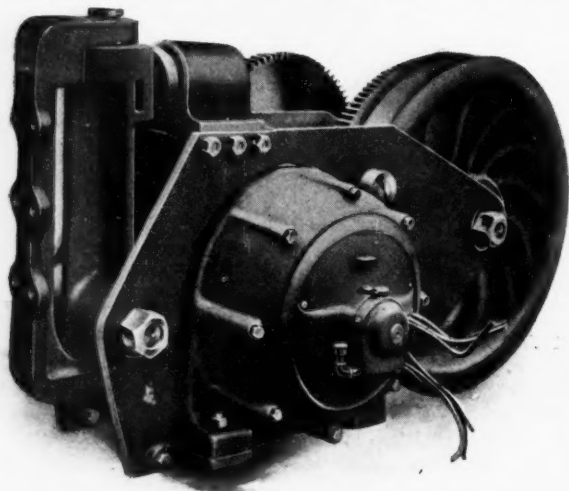


Fig. 2—Electric Turntable Tractor.

making the air installation preferable to all others for some cases.

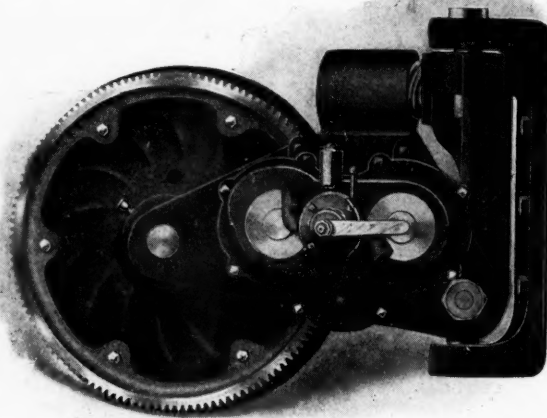


Fig. 3—Compressed Air Turntable Tractor.

These tractors are at present in use on 18 roads in this country. Both the electric and air tractors, as well as other devices designed and patented by Mr. Pilling, are manufactured and sold exclusively by the Weir & Craig Manufacturing Co., Chicago.